March 8, 1948

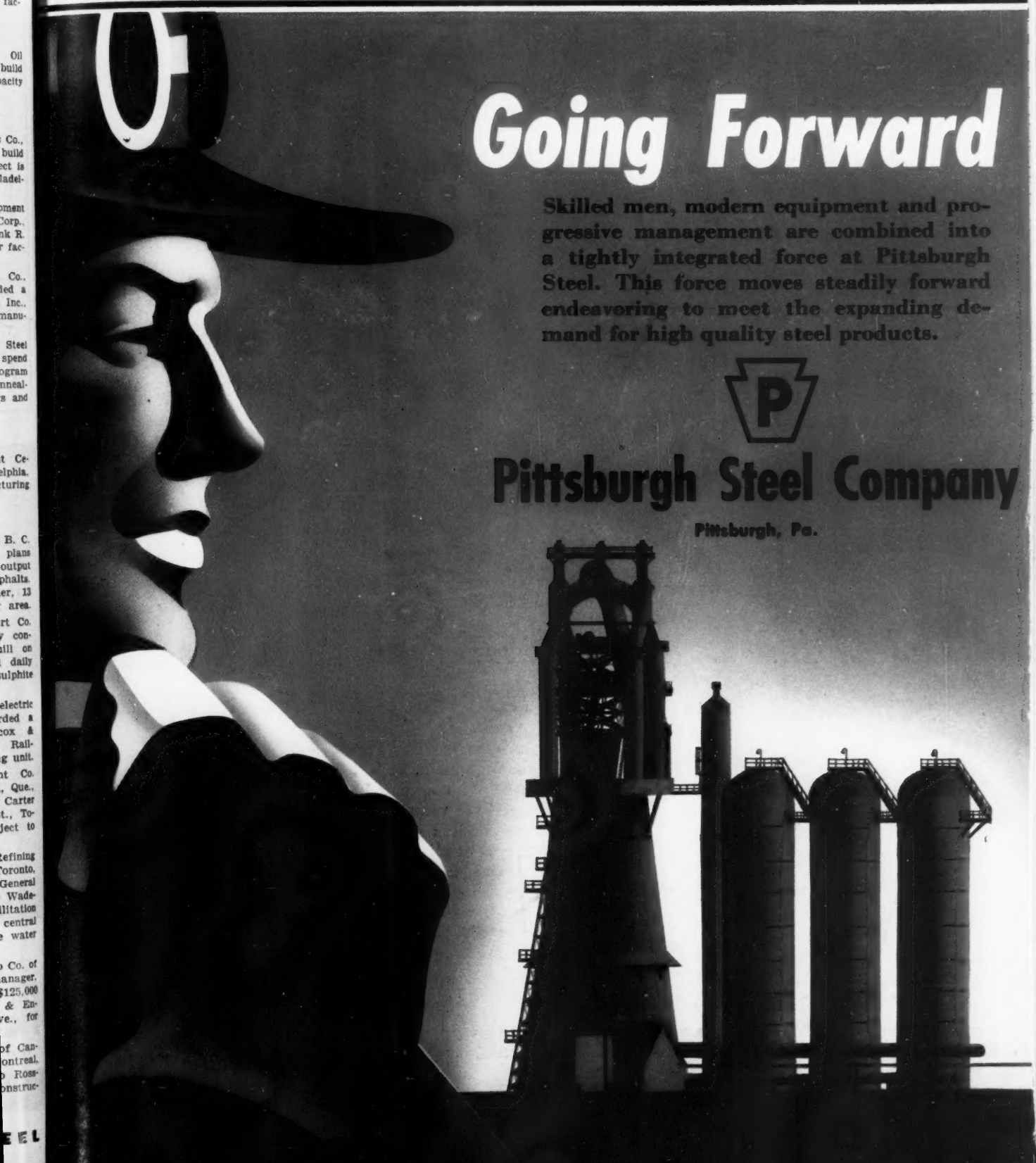
MAR

STEEL

The Magazine of Metalworking and Metalproducing

ESTABLISHED 1882

EDITORIAL INDEX, PAGE 45



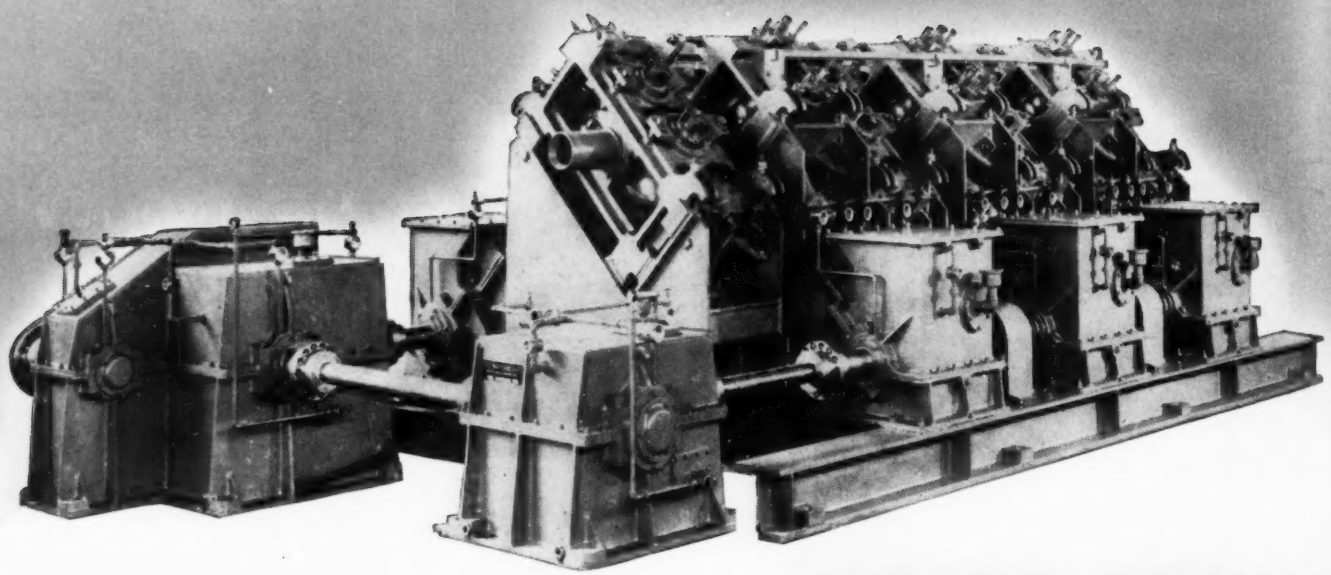
Going Forward

Skilled men, modern equipment and progressive management are combined into a tightly integrated force at Pittsburgh Steel. This force moves steadily forward endeavoring to meet the expanding demand for high quality steel products.

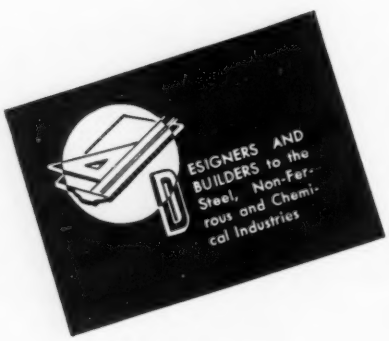
Pittsburgh Steel Company

Pittsburgh, Pa.

AS THE RECORD STANDS



*AETNA-STANDARD has shipped more **SIZING MILLS** than any other Company*



Aetna-Standard's accredited leadership is evidenced by installations made, orders being processed and those being received. With Aetna's knack of ingrained, practical know-how, and the versatility of its forward-looking engineering, you can achieve money-making efficiency with low maintenance cost by relying upon Aetna sizing mills . . . as do other industry leaders. The two types of sizing mills, closed housing and overhung rolls, are built for sizing butt weld, lap weld or seamless tubes from 3/8" to 24" O.D. As specialists, we combine experience, facilities, and knowledge for one purpose — building the most efficient mill equipment for your use. Ask for sizing mill data based upon your specific requirements.

THE AETNA-STANDARD ENGINEERING COMPANY

YOUNGSTOWN, OHIO

ASSOCIATED COMPANIES:

HEAD, WRIGHTSON & COMPANY, LTD., THORNABY-ON-TEES, ENGLAND

AETNA-STANDARD ENGINEERING COMPANY, LTD., TORONTO, ONTARIO, CANADA

EDITORIAL STAFF

E. L. SHANER
Editor-in-Chief

IRWIN H. SUCH
Editor

WM. M. ROONEY
News and Markets Editor

JAY DEEULIS
Engineering Editor

J. D. KNOX
Steel Plant Editor

GUY HUBBARD
Machine Tool Editor

DON S. CADOT
Art Editor

ALLEN G. GRAY
Consulting Editor

ASSOCIATE EDITORS

W. J. CAMPBELL • FRANK R. BRIGGS
VANCE BELL • WALTER F. TOERGE
DAN REEBEL

ASSISTANT EDITORS

H. C. TUTTLE • DOLORES K. BLAHA
HENRY J. HOLTZ • L. J. SKUDERIN
JOHN S. MORGAN • M. T. BORGERHOFF
EDWIN L. KARPICK

RESIDENT EDITORS

E. C. KREUTZBERG
Washington Editor

B. K. PRICE
Eastern Editor, New York

L. E. BROWNE
Associate Editor, New York, Boston

E. F. ROSS
Chicago Editor

J. C. SULLIVAN
Pittsburgh Editor

A. H. ALLEN
Detroit Editor

VINCENT DELPORT
European Editor, London

EDITORIAL CORRESPONDENTS

R. W. KINCEY, *Birmingham*
L. C. FELDMANN, *Buffalo*
SAMUEL S. CARR, *Cincinnati*
MAC HUTCHENS, *St. Louis*
GEORGE R. REISS, *Youngstown*
MAURICE BEAM, *Los Angeles*
ROBERT BOTTORFF, *San Francisco*
R. C. HILL, *Seattle*
C. K. CATES, *Dallas*
F. S. TOBIN, *Toronto*
J. A. HORTON, *Birmingham, Eng.*
LEON JAUDOIN, *Paris, France*
JACQUES FOULON, *Liege, Belgium*

MAIN OFFICE

Penton Building, Cleveland 13, Ohio

BRANCH OFFICES

New York 17.....16 East 43rd St.
Chicago 11.....520 North Michigan Ave.
Pittsburgh 19.....2806 Koppers Bldg.
Detroit 2.....6560 Cass Ave.
Washington 4.....1123 National Press Bldg.
Los Angeles 4 130 N. New Hampshire Ave.
London 2 Caxton St., Westminster, S.W. 1

Business Staff on Page 4

NEXT WEEK . . .

Hot Pressing Propeller Hubs

Carbon Steel Spot Welding

Straight Line Magneto Production

British Mill Rolls Special Sections

Light Metals in Auto Building

STEEL

The Magazine of Metalworking and Metalproducing

VOL. 122, NO. 10 MARCH 8, 1948

NEWS

★ As the Editor Views the News 47
★ News Summary 51
General Steel Price Increase Not Planned 53
Call 13 Steel Executives to FTC Hearing 55
★ Present, Past and Pending 55
Gray Market Deal Disclosed 56
Buyers Are Displaying More Caution 57
GE To Resist Wage Demands 58
Await Report on Steel Needs 59
★ Windows of Washington 60
Drouth To Cut Power Supply in California 63
Plan To Boost India's Output Formulated 64
Some Britons Face Steel Cuts 65
★ Mirrors of Motordom 67
Standard Tube Occupies New Detroit Plant 70
★ Briefs 71
★ The Business Trend 72
★ Men of Industry 74
★ Obituaries 79
★ Construction and Enterprise 184

TECHNICAL

★ Engineering News at a Glance 81
Selecting Automotive Steels 82
★ Seen and Heard in the Machinery Field 87
What To Do About Industrial Fatigue 88
American Society of Tool Engineers Industrial Exposition 93
World Looks to Cleveland for "Last Word" in Tooling 95
Technical Program 97
Exhibitors at Exposition 98
National Officers 100
Exposition Floor Plan 104
★ Progress in Steelmaking—Western Steelmaking Enterprise 128
★ New Products and Equipment 143
★ Helpful Literature 159

MARKETS

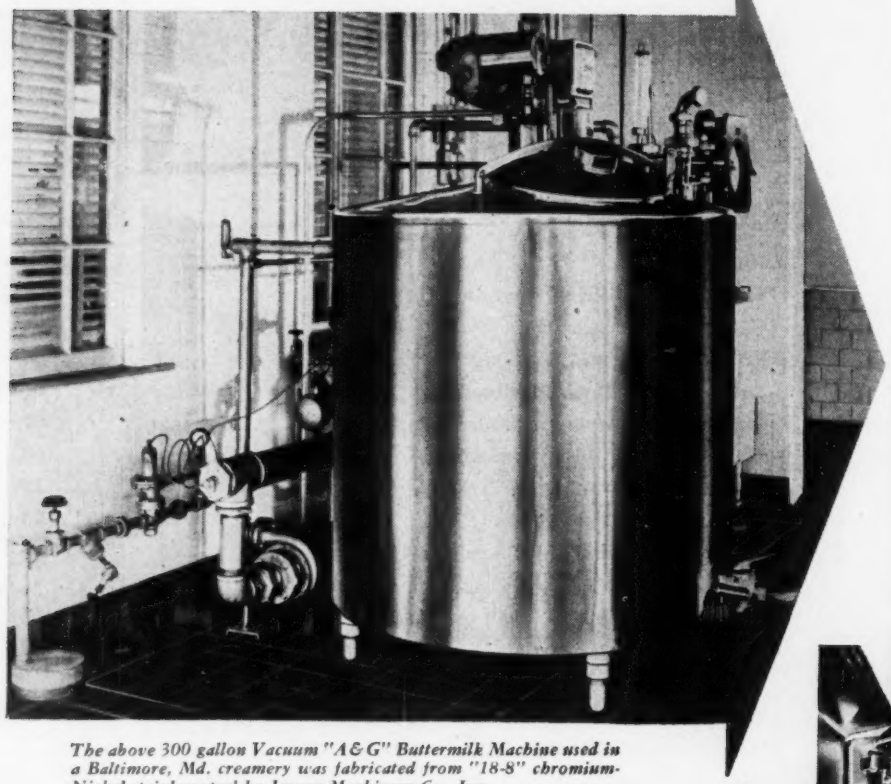
★ Market Summary 161
★ Market Prices and Composites 162
Platinum Price Rise Features Nonferrous Metals Developments 166

★ *Index to Advertisers* 192

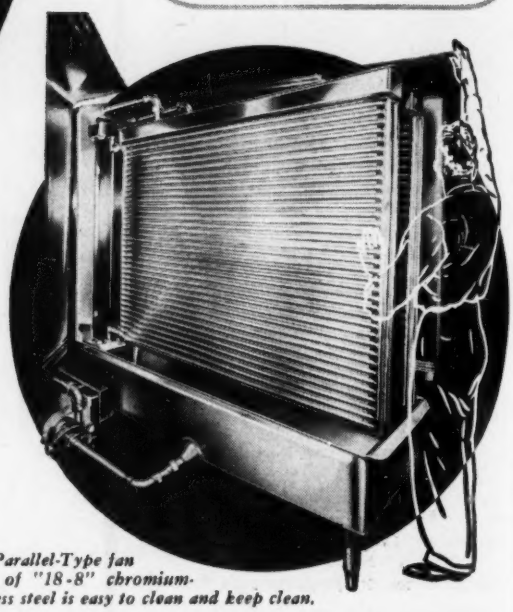
★—Denotes regular features.

When Product Purity is Essential

..take a tip from Dairymen



The above 300 gallon Vacuum "A & G" Buttermilk Machine used in a Baltimore, Md. creamery was fabricated from "18-8" chromium-Nickel stainless steel by Jensen Machinery Co., Inc.



This Jensen Parallel-Type fan cooler made of "18-8" chromium-Nickel stainless steel is easy to clean and keep clean.

Even the *least* contamination by bacteria spells D-A-N-G-E-R to processors of milk.

The faintest contamination from products of corrosion may affect the taste.

And that's why chromium Nickel austenitic stainless steel is used for so many pasteurizers, storage tanks, surface coolers, piping and other units for the dairy products industry.

Easy to keep hygienically clean, standard "18-8" stainless is highly resistant to foodstuffs, atmosphere, most organic and a great many inorganic chemicals, and to dyes and sterilizing solutions.

In addition, for many applications in various fields where resistance to corrosion, impact, wear and abrasion are required, "18-8" permits cutting bulk and dead weight without sacrificing strength or durability. Its great resistance to both high and low temperature effects is especially valuable.

Leading steel companies produce stainless steel containing Nickel in sheet, strip, bar and tubular form. A list of the sources of supply will be furnished on request.

EMBLEM OF INCO SERVICE
TRADE MARK

Over the years, International Nickel has accumulated a fund of useful information on the selection, fabrication, treatment and performance of engineering alloy steels, stainless steels, cast irons, copper-base and other alloys containing Nickel. This information is yours for the asking. Write for "List A" of available publications.

THE INTERNATIONAL NICKEL COMPANY, INC.

67 WALL STREET
NEW YORK 5, N. Y.

March 8, 1948

Time To Hold the Line

The hearing in Washington last week before the Joint Congressional Committee on the Economic Report in which three prominent steel executives were sharply rapped on the knuckles, demonstrates the present unpopularity of any move, however minor, which might contribute to a continued upward spiral in wages and prices. In fact, both Republican and Democratic leaders, some of whom are usually sympathetic toward business, literally threatened the reimposition of government controls.

In his statement before the committee, President Fairless of U. S. Steel said his company had suffered heavy loss in 1947 on over 2 million tons of semifinished sold to nonintegrated mills and forge shops and saw no reason why a subsidy of about $5 a ton should be granted to a handful of customers.

President Homer of Bethlehem Steel said that semifinished prices were raised Feb. 18 after its salesmen found that the principal seller had notified its customers of an increase some time prior to Feb. 13; that it may be necessary to sell structural shapes on the basis of the existing higher market; that Bethlehem's net realized price for steel had gone up only 48 per cent since 1939 compared with 111 per cent for all commodities.

President Batcheller of Allegheny Ludlum pointed out that an increase of $7.30 in semifinished purchased from other mills had made it necessary to increase carbon steel strip $10 a ton.

All three men presented evidence showing that the steel industry could have sold its products at much higher prices; that recent scattered increases will have only minor effect on the cost of making consumer goods—only 61 cents in the case of a refrigerator.

Unfortunately, the steel price increases come at a time when there is growing resistance to higher costs both on the part of business and the individual and when many business indicators hint that a leveling-out period is at hand. Some of the most acute current scarcities conceivably could fade over night. As a large buyer of sheets and strip says, "Inventories are out of balance and the moment we see any signs of easiness, less desirable commitments will be cancelled and we will order what we want."

In view of the evidence, maybe it is time for labor and industry to hold the line, respectively, on wages and prices.

* * *

TOUGH ASSIGNMENT: Plans are being formulated by the Department of Commerce for a study of future steel requirements. This is a worthy undertaking, and one that, properly executed, can help not only the steel industry but industry at large in determining future expansion and sales policies.

It is understood the task is being approached without thought of serving any propaganda purposes, such as to produce figures to prove that steelmaking capacity should be quickly increased to 110 million tons a year. Emphasis will be on strictly factual estimates. Such an approach should remove suspicion of motive.

Three separate periods will be covered. The first will be devoted to the four years of the Marshall Plan, to the end of 1951, separate treatment for these years being decided upon because it will be a period of abnormal demands. The second period, 1952 through 1956, will be considered a period of return to normal conditions of economic activity. The third period will be an indefinite time beyond 1956.

Difficulties are likely to be encountered in

(OVER)

setting up estimates for all three periods, but, obviously, greatest trouble probably will be met in projecting beyond 1956. It is to be hoped that the study of the first and second periods will provide some sort of projection technique which will permit reasonably accurate estimates of demand almost a decade from now.

This is a tough assignment the Commerce Department has handed H. B. McCoy, R. Matthes and Dr. Robert Weidenhammer. They are no more adept at analyzing future markets than many in private industry, so it is clear they must have the fullest co-operation of industry if they are to come up with conclusions of merit. —p. 60

* * *

CAUTION GROWING: Ever since the break in the commodity markets there has been a growing note of caution noticeable in business circles.

While there has not yet been any substantial reflection of this caution in steel demand, still, metalworking companies, as a general thing, appear to be leaning more toward the conservative side in their buying policies.

Contributing to the new note of caution is the improvement in deliveries of some materials and components, a more co-operative attitude on the part of sellers, an increase in the number of calls from salesmen, and, of course, the easiness in the commodity markets. There is no doubt that things are beginning to shape up a little more in favor of the buyer—a healthier situation all around—though it is still too early to assume that a switch to a buyers' market has definitely materialized. —p. 57

* * *

VOLUNTARY ALLOCATION: In case anyone may be tempted to discount the government's latest scarce materials allocation program he would be well advised to take another look before concluding that the whole thing isn't worth a pinch of snuff.

The program still is in the formative stages, it is true, but an administrative organization is being whipped into shape by OIC Director John C. Virden which shortly will begin to function in high gear.

Slow pace at which OIC has been getting into operation has led some observers to the view allocations didn't merit any great amount of concern on the part of the industrialist. Perhaps such thinking will prove to have been justified, but it would be extremely shortsighted to write-off the program as minor at this juncture. In fact, until the government's hand has been fully shown such would be hazardous. After all, it had been expected the program would take some time to shape up. Now that it is shaping up it warrants more attention than ever. —pp. 59, 62

* * *

INDIA'S FUTURE: Economic planning envisions an ambitious program of industrial expansion and development in the newly freed India, the land of mystery to most of the western world. Actually, it is safe to say that few westerners have given much thought to India as an industrial state. However, Indian industry is substantial and includes efficient steelmaking capacity. More important is the fact the country has the potential for much expansion.

Whether the new India's economy will be nationalist in character has been a provoking question before the world for a long time. The answer, at last, appears to have been given as the result of a recent Industries Conference in New Delhi held under sponsorship of the government. Through a resolution adopted at this meeting it appears all three types of industries—state-owned, privately owned and jointly owned—will have their place in the economy.

It remains to be seen whether projected ambitious plans for industrial expansion can be brought to fruition in such a hybrid economy. Results will be awaited with more than ordinary interest throughout the world. —p. 64

* * *

MACHINES INSPIRE TOOLS: One of the reasons why mass production has made such rapid strides in America is that machine tool builders and tool engineers constantly have been "pacing" each other in the race for greater output, better quality and lower product cost.

Since last September the tool engineering profession has been striving vigorously to meet the challenge of speeds, feeds and operational efficiency of hundreds of new machine tools unveiled at the big show in Chicago. At Cleveland Public Auditorium, Mar. 15-19, the ASTE Industrial Exposition will reveal to 50,000 metalworking executives a vast array of improved items of tooling designed to stand up under everything that the latest machines can give. —p. 93

Irwin H. Such

EDITOR

News Summary

PRICES—The big ado over the recent increases in semifinished steel prices is abating. Top steel executives appeared (p. 53) before the Joint Congressional Economic Committee last week to defend their action on economic grounds, told how the items affected had been produced at a loss during recent months. Committee members did not seriously attack their economic argument, but criticized the action as bad timing and for its psychological effect. The steel producers said no general price increases are being planned at this time, but that future action would hinge on the trend in costs. A third round wage increase, they hinted, would necessitate further adjustments in prices.

LABOR—Negotiations on metalworking wage contracts are in the preliminary stages in the electrical and auto industries. No definite indication of the probable settlement has yet come out of the early conferences, although industry has indicated it will resist and labor unions say they will press demands for substantial wage increases (p. 58). Interest in the wage negotiations will mount steadily until settlements in major industries indicate what the 1948 pattern will be.

FORECASTING STEEL NEEDS—Office of Domestic Commerce is tackling a tough assignment in forecasting the nation's steel requirements (p. 60) for an indefinite period. The study now being undertaken will attempt to evaluate demand for the period covered by the Marshall Plan, for the five years following the Marshall Plan and then for the period beyond 1956. Commerce Department officials promise the study will be honest and will not be designed to serve propaganda purposes, as was true of some earlier government surveys.

BUYERS' MARKET RETURNING?—Observers of the automotive industry are speculating on whether or not the bloom is off the postwar car market (p. 67). As yet, they can offer no tangible evidence of an early balancing of supply and demand, but there is a growing uneasiness among dealers and manufacturers. Used car prices have dropped, many dealers are getting caught up on order backlogs, and others are wondering how much water their order books contain. Many are hoping fair weather will stimulate sales.

INDIA—A compromise solution to the controversy between private enterprise and nationalization is in the making in India (p. 64). The Indian economy will include three types of enterprises—privately-owned, state-owned and jointly-owned. A considerable measure of central planning will be provided with the view of serving the country's national and defense needs.

GRAY MARKET—Senator Martin, chairman of the steel subcommittee of the Senate Small Business Committee says the gray market in steel, far from becoming discouraged by his investigations, is becoming stronger and better organized (p. 56). Latest hearings disclosed details of how a steel company clerk was able to divert steel to a gray market buyer without the knowledge of his superiors.

BUYING CAUTIOUSLY—Metalworking companies are becoming increasingly cautious in their purchases of components and materials, excepting steel, to avoid being caught with large inventories in event of sharp price declines. Numerous companies (p. 57) are holding their inventories to two or three months instead of the six months or so that was common last year.

SIGNS OF THE TIMES—January construction contracts were the largest for that month (p. 72) since 1925. . . . Northern California's severe drouth (p. 63) is expected to reduce the state's electric power supply, increase demand for oil and gas. . . . Some British automakers may suffer a cutback in their steel supply (p. 65) for failure to meet export quotas. . . . Thirteen steel executives have been summoned (p. 55) to appear at Federal Trade Commission hearings on the steel industry's pricing policies this week. . . . STEEL's index of industrial production has moved into new high ground for this year at 170 per cent of the 1936-1939 average.

"KEY PEOPLE"—*When You Need Steel*

Ryerson's function is not only to supply your steel, but to deliver it on time. From the moment the Ryerson switch-board flashes your incoming call until the steel is laid down in your plant, a corps of helpful, intelligent employees well-trained in the Ryerson "Immediate Steel" tradition are at your service.

The likeable young women at the switch-board, phone-order salesmen, dispatchers, crane operators, skilled warehousemen who cut, shear and shape stock sizes to fit your specification, truck drivers—all of them are key people at Ryerson—key people in your service, when you need steel!

In spite of shortages, we are putting forth every effort to serve all Industry to the best of our ability. Naturally, many sizes and certain products are out of stock. However, for the most part you can depend on Ryerson for immediate shipment of a wide range of steel products.

PRINCIPAL PRODUCTS

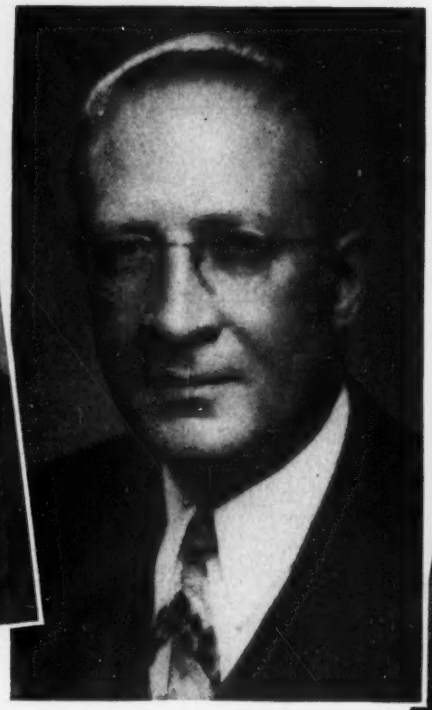
Bars—hot and Cold rolled	Mechanical Tubing	Tool Steel
alloy steel	Boiler Tubes and Fittings	Wire, Chain
reinforcing	Allegheny Stainless—	Bolts, Rivets
Structurals	sheets, plates, shapes,	Babbitt
Plates—	bars, tubing, etc.	Metal Working Tools
Inland 4-Way Floor Plate	Sheets and Strip Steel	& Machinery, etc.

JOSEPH T. RYERSON & SON, INC., Plants: New York, Boston, Philadelphia, Detroit, Cincinnati, Cleveland, Pittsburgh, Buffalo, Chicago, Milwaukee, St. Louis, Los Angeles

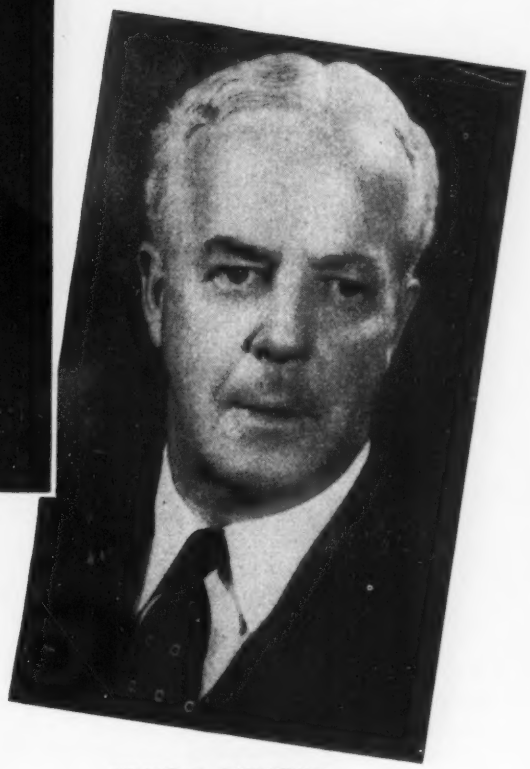
RYERSON STEEL

STEEL
March
8
1948

B. F. FAIRLESS



ARTHUR B. HOMER



HILAND G. BATCHELLER

General Steel Price Increase Not Planned

Producers tell congressional committee trend in costs must determine future action. Hint third round wage boost would necessitate new adjustments

GENERAL increases in steel prices are not being contemplated by major steel producers who expect to pursue the same policy of "price restraint" they have followed since the end of the war.

Price reductions will come when the producers find costs are no longer on the uptrend.

The industry has entered into no agreement or understanding with the United Steelworkers to grant further wage increases.

Recent upward adjustments in the prices of semifinished steel and some other products were made to offset losses in sales of these products.

These were the highlights of the testimony of three top executives of major steel producers before the Joint Congressional Economic Committee which had called them to Washington to explain the recent price action. Appearing before the committee were B. F. Fairless, president, United States Steel Corp.; Arthur B. Homer, president, Bethlehem Steel Co.; and Hiland G. Batcheller, president, Allegheny Ludlum Steel Corp.

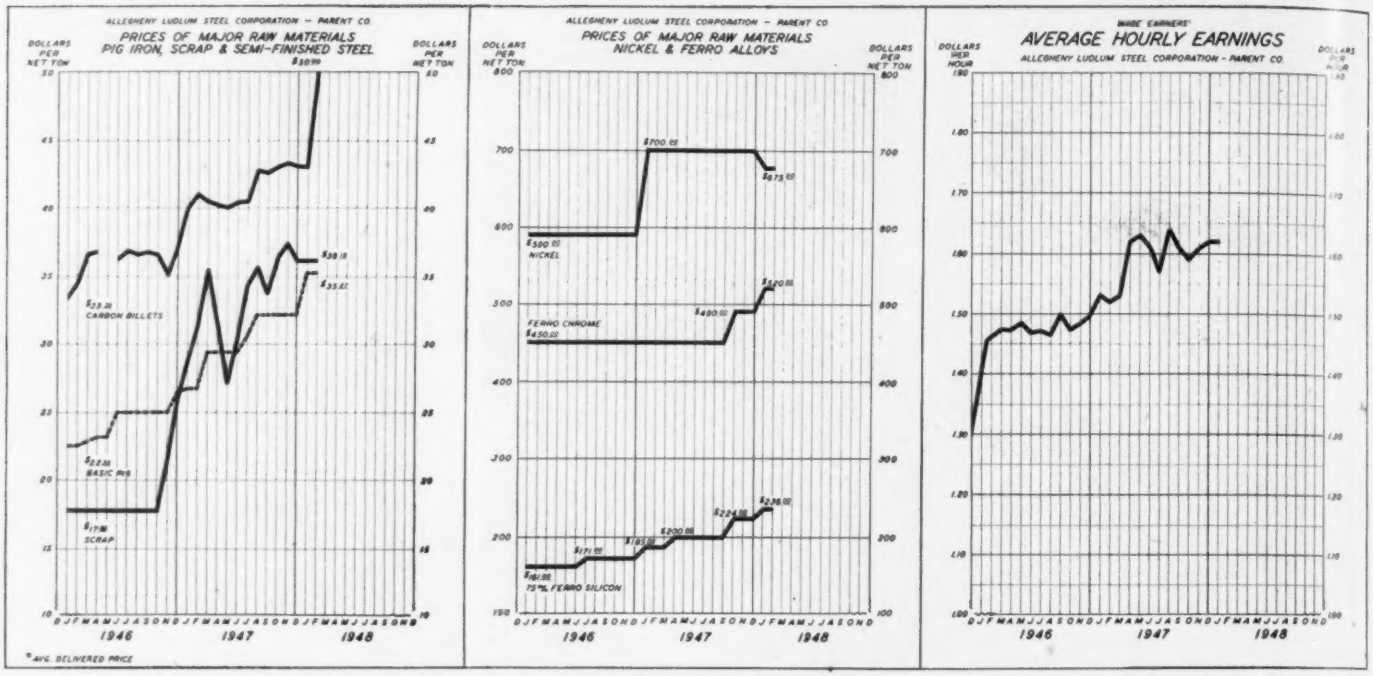
Committee Critical — While the steel executives presented sound economic arguments for the price adjustments, the committee was sharply critical of their action. Questioning by committee members indicated they believed the increases were unfortunate.

Sen. Robert Taft (Rep., O.), committee chairman, suggested the price increase was badly timed, coming on the eve of new wage negotiations with the union and in the face of declining commodity prices. Senator Taft said the steel price increases have encouraged every union in the country to ask more in the forthcoming wage negotiations than they otherwise would have asked.

Sen. Ralph Flanders (Rep., Vt.) stressed the psychological and moral effects of the price boosts. He reminded Mr. Fairless that because of its size and power U. S. Steel "finds itself in the very unfortunate position where it must make private decisions in many respects on the basis of public policy and the long-range interest of the country as a whole."

New Deal representatives on the committee, Senators Myers of Pennsylvania and O'Mahoney of Wyoming, attacked the economic arguments of the producers and attempted to show that the increase in semifinished prices was putting a squeeze on nonintegrated producers.

Fairless Explains Increase — The U. S. Steel president termed the crit-



Steelmaking wage and material cost increases illustrated in charts introduced by H. G. Batcheller

icism which followed the price increase on semifinished items as "emotional and political in character." Critics were making a "mountain out of a mole hill," he said.

Sales of semifinished steel by U. S. Steel subsidiaries, principally by Carnegie-Illinois Steel Corp., are small, amounting to approximately 2 million tons last year. Customers number not more than 75, with 10 companies taking about 80 per cent of the entire sales.

During January, U. S. Steel lost about a million dollars on its sales of semifinished material to a handful of customers. "We saw no reason why United States Steel should be granting a subsidy of around $5 a ton to these particular customers," Mr. Fairless said.

"It seemed to us that we had the alternative of doing one of two things: Either to raise the price of such semifinished material so as to permit us at least to break even on such sales, or to abandon the marketing of semifinished steel entirely and use that steel for the production of our own finished steel products. We chose the first alternative, as it did not seem that we should cut off the source of raw steel for these particular customers."

Victim, Not Cause — Contending that the inflationary influence of the price increase has been "grossly exaggerated," Mr. Fairless asserted that U. S. Steel "is the victim of inflation and not the cause of it."

Steel prices, he pointed out, have lagged far behind the prices of other commodities. "United States Steel cannot fairly be made the scapegoat for the nation's economic ills."

While steel prices have advanced 39 per cent since 1940, wholesale prices of all commodities advanced 108 per cent. If farm products and food are not counted, the rise in general commodity prices has been 75 per cent, or about double the increase in base prices of steel.

Other cost increases mentioned by Mr. Fairless: Wages, up 80 per cent; scrap, more than doubled; tin, up 90 per cent; a crane which cost $39,000 in 1940 now costs $80,000; a blast furnace which cost $3.5 million in 1940 now costs $7 million.

While Mr. Fairless emphasized that the corporation does not contemplate making any general price advances, he warned that if steel costs continue to go up, steel prices must also go up.

"That is inevitable. If this country experiences a third round of wage increases, it must also expect to experience still higher prices for most of the products of industry."

Exercise Restraint — Bethlehem's President Homer maintained his company has pursued a policy of "price restraint" and will continue to do so. Bethlehem currently is selling certain steel products "substantially under the prices of important competitors," he said, citing his company's price on plates as being $10 to $36 a ton under those of some large legitimate competitors.

The recent rise by Bethlehem of semifinished steel represented less than 1 per cent of its sales of rolled steel products.

Citing low profit margins and high manufacturing costs on certain items, he said that Bethlehem might advance the price on structural shapes to the present general market level but that the company would adhere to its policy of "price restraint."

Hopes for Reductions—Improved production efficiency, wage stability, stability in material prices and sound government financial policies were the factors that could bring about a price reduction, Mr. Homer suggested.

Referring to the 95 per cent increase in average hourly earnings of steelworkers since the 1935-1939 base compared with 68 per cent increase in the cost of living as of Feb. 1, Mr. Homer said: "We see no justification for any wage increases."

Increases Long Overdue — Mr. Batcheller said that Allegheny Ludlum's increases in silicon sheets, ranging from $15 to $25 a ton were long overdue on the basis of cost increases. Since the war, the cost of making silicon sheets has advanced $40 a ton, against previous price increases of only $22 a ton.

Allegheny Ludlum also increased carbon strip prices $10 a ton recently to compensate for an increase of about $7.50 a ton on billets and other increased costs.

Mr. Batcheller presented three charts, reproduced on this page, illustrating the advances in costs of pig iron, scrap, semifinished steel, ferroalloys, nickel and wages. Other cost increases weighing heavily in the steel producing industry are, he said, freight, fuel oil, coal and employee benefits.

Call 13 Steel Executives to FTC Hearing

OFFICIALS of 13 steel companies have been summoned to appear as witnesses when the Federal Trade Commission resumes hearings in Washington next week in connection with its complaint charging the American Iron & Steel Institute and 101 producers of steel products with conspiracy and collusive action to fix and maintain delivered price quotations and to restrain competition.

The subpoenas require the officials to bring with them documents relating to their companies' prices from 1935 to 1947.

The officials summoned to appear before FTC Trial Examiner Frank Hier during the week are Charles R. Cox, president, Carnegie-Illinois Steel Corp., Pittsburgh; Arthur R. Homer, president, Bethlehem Steel Co., Bethlehem, Pa.; Charles M. White, president, Republic Steel Corp., Cleveland; Adam Hazlett, vice president, Jones & Laughlin Steel Corp., Pittsburgh; Wilfred Sykes, president, Inland Steel Co., Chicago; Carl I. Collins, president, Superior Steel Corp., Pittsburgh; Roy C. McKenna, president, Vanadium-Alloys Steel Co., Latrobe, Pa.; Joseph T. Somers, president, Wyckoff Steel Co., Pittsburgh; W. H. Colvin Jr., president, Crucible Steel Co. of America, New York; Henry A. Roemer, president, Sharon Steel Corp., Sharon, Pa.; M. W. Saxman Jr., president, Latrobe Electric Steel Corp., Latrobe, Pa.; Edward L. Parker, president, Columbia Steel & Shafting Co., Pittsburgh; and Joseph H. Carter, president, Pittsburgh Steel Co., Pittsburgh.

To Push Hearing—The FTC complaint charges, among other things, that the respondents' concurrent use of the "basing point system," implemented by a "price book" passing under the label of freight rate compilation, is pursuant to a price-fixing conspiracy.

The institute and the respondent producers have generally denied the charges and have joined issue on virtually every material allegation of the complaint.

Lynn C. Paulson, counsel supporting the complaint, said he hopes to complete the FTC's case by summer.

In ten days of hearings to date, Mr. Paulson said testimony and exhibits have been introduced to show certain bids received from various respondents by federal government departments on major steel items have been identical to one-thousandth of a cent. A. B. Custer, of the Bureau of Supplies and Accounts, Navy Department, and John L. Neeley Jr., of the Tennessee Valley Authority, testified the respondents generally have not been "responsive" to invitations for bids since the close of the war. Bids thus far introduced have related to 1940, the last year of "competitive bidding" prior to the war.

Charts Shown—Mr. Paulson also introduced charts to show the working of the so-called "basing point system" in the pricing of steel, which is alleged to be used collusively to achieve "matching" of delivered price quotations. The chart for wire rods, for example, was offered as evidence tending to show that while there are producing plants at 33 different locations, prices are made as though there were only six.

Steel Ingot Production Increases in January

Production of 7,472,776 tons of steel in January, as reported by the American Iron & Steel Institute, consisted of 6,768,497 tons of ingots and steel for castings from open hearths, 361,110 tons from electric and crucible furnaces, and 343,169 tons of bessemer ingots. The total included 682,240 tons of alloy steel and 987,012 tons of hot-topped carbon ingots. The industry operated at 93.6 per cent of the increased capacity in January, against 95.2 per cent in December.

Although the January output was larger than the 7,366,075 tons produced in December, the industry operated at a lower rate of capacity. The January operating rate of 93.6 per cent is based on the revised annual steel capacity of 94,233,460 tons while the December rate of 95.2 per cent is based on the former rated capacity of 91,241,250 tons.

Production and percentage of capacity operations in the various districts were reported, respectively, as follows: Pittsburgh-Youngstown, 3,034,477 tons and 94.3 per cent; Chicago, 1,607,782 tons and 92.2 per cent; eastern, 1,442,224 tons and 92.1 per cent; Cleveland-Detroit, 615,440 tons and 94.4 per cent; western, 398,553 tons and 92.8 per cent; and southern, 374,296 tons and 99.8 per cent.

Present, Past and Pending

■ ELECTRONICS CONFERENCE SELECTS CHAIRMAN
CHICAGO—National Electronics Conference Inc. has selected W. C. White, General Electric Co., Schenectady, N. Y., as chairman of its directors for the current year.

■ WAA DISPOSES OF 113 STEEL PROPERTIES
WASHINGTON—War Assets Administration announced that as of Feb. 16 it had disposed of 113 surplus government-owned steel properties by sale or lease to private industry. On the basis of acquisition cost to the government, these disposals represent about 82 per cent of WAA's total inventory of 150 surplus steel plants and facilities.

■ TIMKEN BEARING PRICES TO REMAIN STEADY
CANTON, O.—Timken Roller Bearing Co. has advised 10,000 bearing customers that with but a few exceptions present prices on bearings will hold until June 30, 1948.

■ DIESEL-ELECTRIC LOCOMOTIVE OUTPUT TO RISE
NEW YORK—American Locomotive Co. expects to produce 150 per cent more diesel-electric locomotives in 1948 than in 1947.

■ SHIPMENT OF LOCOMOTIVES TO ARGENTINA BEGINS
PHILADELPHIA—The first of 30 oil-burning steam locomotives to be built for passenger and freight service on Argentine state railways left the Eddystone, Pa., plant of Baldwin Locomotive Works last week.

■ MACHINE TOOL COMPANY PRESIDENT DIES
ROCKFORD, ILL.—Carl L. Mattison, 61, president, Mattison Machine Works, of this city, died Mar. 3 from a heart attack at his winter home in Laguna Beach, Calif.

■ SYLVANIA ELECTRIC BUYS INTO ENGLISH FIRM
NEW YORK—Sylvania Electric Products Inc. has acquired a substantial minority interest in Thorn Electrical Industries Ltd., London, Eng.

■ WESTINGHOUSE REDUCING REFRIGERATOR PRICES
PITTSBURGH—Westinghouse Electric Corp. is reducing its refrigerator prices by 4 to 7 per cent effective Mar. 15.

Gray Market Deal Disclosed

Martin subcommittee of Senate Small Business Committee reveals details of transaction involving sheet mill order clerk, an appliance salesman and a warehouse

IMPROVING on its previous technique in investigating the steel gray market, the Martin Steel Subcommittee of the Senate Small Business Committee has made a start at revealing details about purchases by individual consumers.

For its initial study it singled out the Steel City Welder Co., Gary, Ind., and showed how this company obtained No. 12 gage black sheets produced at the Gary sheet mills of the Carnegie-Illinois Steel Corp.

It was a 3-cornered arrangement in which a $268-a-month sheet mill order clerk, although admittedly aware that his company was doing all within its power to kill the gray market, was instrumental in obtaining sheets for sale at premium prices in order to make "a few dollars," and in which a former appliance salesman, upon being discharged from the Army, saw an opportunity for making some money.

Were Close Friends—The salesman and the sheet mill order clerk, it was revealed, had been close friends since 1933 when they were in high school together. In between was a warehouse interest that sold the sheets as an act of friendship for the order clerk. The warehouse interest, Senator Martin was careful to state, was entirely blameless in that it was acting in its legitimate capacity and was selling at warehouse prices.

Figuring in the business were 268.7 tons of sheets which were shipped to the Copco Steel & Engineering Co., Detroit, from the Gary works of Carnegie-Illinois at regular mill prices. At the intercession of N. J. Courtis, Gary sheet mill clerk, Copco shipped the sheets to the Steel City Welder Co., Gary, charging regular warehouse prices of $94 and $96 a ton. But the appliance salesman, E. J. Fleming of Gary, would appear when the steel had been delivered, and collect premium prices—first $180 a ton and later $200 a ton; he would pick up the invoices from Copco and pay Copco. Out of the profit, ranging from $86 to $106 per ton, he was to make division with Mr. Courtis.

Profit Split—Mr. Fleming testified he paid Copco $25,895 for the steel and collected $57,462 from Steel City Welder Co., leaving a profit to be split up with Mr. Courtis.

Actually, said Mr. Fleming, he had kept more than 50 per cent of the profit himself because he had done more "work" than Mr. Courtis; he was not sure just how much money he had turned over to Mr. Courtis but went on to say that he still owes the latter between $4000 and $5000. At any rate, Fleming testified, Courtis was getting less than the even break he, Courtis, expected. Courtis, in turn, was somewhat hazy about the amount of money he had received from Fleming; it was explained that it all was paid in cash. In making out his income tax return for 1947, said Mr. Courtis, he is including some $3000 which he received from Mr. Fleming and deposited in his bank account.

Thomas Lekich, director of purchases for the Copco company, told the subcommittee that when Mr. Courtis asked him over the telephone to ship steel to the Steel City Welder Co. he was glad to oblige Mr. Courtis. The latter, Mr. Lekich testified, represented himself as a partner in the Steel City concern and said he expected to leave the Carnegie-Illinois employ shortly to go with Steel City Welder. Anyway, Mr. Lekich went on the transaction was a warehouse deal at straight warehouse prices. He had no knowledge, he said, that Steel City Welder was paying $180 and $200 a ton for the steel.

Is Paid Bonus—Mr. Lekich's testimony, incidentally, disclosed an interesting compensation arrangement. In addition to his salary, he told the subcommittee, Copco pays him a bonus of $1 a ton for every ton of steel in excess of 48,000 tons per year that he is able to procure.

One of the points brought out was that without the steel bought at gray market prices Steel City Welder would have been unable to operate, as it had no other steel source.

"I had hoped that the initial investigations by this subcommittee would have the effect of discouraging gray market sales of steel," Senator Martin said during the hearing. "But the gray market now seems to be better organized than ever."

Production of Pig Iron Rises Slightly in January

Production of pig iron, ferromanganese and spiegeleisen increased slightly in January to 5,193,935 net tons from 5,177,137 tons in December and compared with 5,071,369 tons in January of last year, according to the American Iron & Steel Institute, New York. Blast furnaces operated at 90.9 per cent of capacity in January compared with 92.9 per cent in December and 90.8 per cent in January, 1947.

Of last month's production, 5,126,587 tons consisted of pig iron, distributed by districts as follows: Pittsburgh-Youngstown, 2,045,184 tons; Chicago, 1,032,518 tons; eastern, 958,274 tons; Cleveland-Detroit, 494,850 tons; southern, 384,553 tons; and western, 211,208 tons. The eastern district produced 29,066 tons of ferromanganese and spiegeleisen in January; Pittsburgh-Youngstown, 28,482 tons; and southern, 9800 tons, making a total of 67,348 tons.

PIG IRON AND FERROALLOY PRODUCTION FOR JANUARY

Blast Furnace Capacity and Production—Net Tons — JANUARY - 1948

	Number of companies	Annual blast furnace capacity	Production: Pig Iron — Current month	Pig Iron — Year to date	Ferro Manganese and Spiegel — Current Month	Ferro Manganese and Spiegel — Year to date	Total — Current month	Total — Year to date	Percent of capacity — Current month	Percent of capacity — Year to date
DISTRIBUTION BY DISTRICTS:										
Eastern	11	13,093,560	958,274		29,066		987,340		89.0	
Pittsburgh-Youngstown	17	25,588,120	2,045,184		28,482		2,073,666		95.6	
Cleveland-Detroit	6	6,495,000	494,850		-		494,850		89.9	
Chicago	7	14,700,290	1,032,518		-		1,032,518		82.9	
Southern	8	4,949,660	384,553		9,800		394,353		94.0	
Western	3	2,612,300	211,208		-		211,208		95.4	
TOTAL	35	67,438,930	5,126,587		67,348		5,193,935		90.9	

Buyers Are Displaying More Caution

METALWORKING companies are becoming increasingly cautious in their purchasing of components and materials, other than steel, so they will not be caught with large inventories in event of price declines.

With steel, however, consumers feel there is no immediate danger of accumulating disproportionately large stocks, and in most instances continue to press for tonnage. Most buyers admit a sellers' market still exists in most materials and products and that delivery continues to be the prime consideration, with quality second and price third.

Caution Increases—Nevertheless, the recent commodity market decline has helped instill caution among buyers in durable goods companies. For instance, a midwestern machine tool builder is holding its inventories to a 60-day supply instead of its customary six-months' level, while a stoker manufacturing company is restricting its inventories on everything but steel to three months. On steel, that company would permit a six-months' inventory if that much were available. Another metalworking company reported that to protect itself against price declines it is holding its inventories to three months instead of its usual six-months' supply.

Also contributing to the increase in caution in purchasing policies is the improvement in deliveries of some materials and components; a more co-operative attitude on the part of sellers; and an increase in the number of calls from salesmen.

Sellers' Market Persists—Indicating, however, that metalworking companies' purchasers still face a sellers' market are reports they cannot get downward price escalator clauses inserted in contracts and that each week brings new notices of price increases or reductions in discounts. Nevertheless, some purchasers see signs of improvement in that more frequently they can get price protection for a limited but specified time. In contrast to the prevalent open pricing, a firm price on some heavy equipment can be obtained if one insists sufficiently, a purchaser for an industrial truck manufacturer reported.

Further reflecting the increasing caution on the part of purchasers, several important industrial organizations have said that henceforth they will insist on being protected on future price declines through two-way escalator clauses.

FOR EXPORT: Destined for Europe, these antifriction bearings are being readied for shipment. With domestic needs being met on schedule, manufacturers for the first time since 1939 are able to supply foreign demands. Vital in rehabilitation of Europe, bearing exports have more than doubled in the last year

Protesting Over-charges—In their active resistance against irregular sales and pricing methods, industrial concerns are protesting with increasing vigor against unauthorized overcharges on invoices for materials on which prices have been advanced without notification, and are refusing to pay excessive cancellation charges when vendors resell canceled products without loss.

In most quarters the increasing caution and resistance displayed among purchasers is not viewed with alarm. Rather, it is looked upon as a healthy step toward return to normal purchasing methods. However, purchasers suggest the following five points be watched for first indications of business recession: 1. Refusal of shipments by customers; 2. cancellation of orders before shipment; 3. excessive inventory accumulation in warehouses; 4. shrewd legal efforts to exercise "trick" clauses in contracts; and 5. nervous offerings of "special deals."

Buyers Confident—In its report for February, the National Association of Purchasing Agents, New York, says purchasing agents generally express confidence in the immediate future, looking on the commodity market drop as a necessary and healthful adjustment long overdue. Showing a shorter range in buying policy is being adopted, the NAPA report says that in February 92 per cent of the purchasers reporting were holding to a buying policy of 90 days and under, compared with 87 per cent in January. "The real change in buying attitude has come within the 'hand-to-mouth to 90-day' bracket," says the report. "Sixty days is the coverage most desired, but many are trying to hold commitments under this."

Ford Buys from 120 West Coast Suppliers

California manufacturers have received more than 120 contracts for supplying automotive parts required in the assembly of Ford, Lincoln and Mercury cars and Ford trucks under the Ford Motor Co.'s West Coast purchasing program during the past year.

Contracts under the $17 million purchasing program to date call for the supply of a wide variety of parts. These include standard hardware items, such as sheet metal screws, cap screws, and the like; automatic screw machine parts, steel forgings, cold headed parts, molded and sponge rubber parts, paper and felt gaskets, paints, wiring assemblies, coil spring, interior trim sets, batteries, bumpers, tires, and aluminum timing gears.

GE To Resist Wage Demands

Unions and industry in preliminary maneuvers in third round pay increase battle. Settlement pattern in doubt. Building trades locals win concessions

NEGOTIATIONS on third round wage increase demands now are working through the preliminary phases in the electrical and automotive industries. Bargaining conferences in the steel producing and fabricating industries are scheduled to get under way early next month. Meanwhile, all industry has its eyes on John L. Lewis, awaiting some sign as to what's cooking in coal labor circles.

While the outcome of current and coming negotiations remains in doubt, several straws in the wind can be discerned.

General Electric Co. last week opened negotiations with the left-wing United Electrical Workers-CIO with the announcement it would refuse any wage increase for its 100,000 workers as "inflationary." The company held that a wage boost at this time would push the cost of living higher and imperil the recent price reductions announced by GE on its consumers goods lines. The union is asking "substantial" wage increases, many fringe concessions, and has indicated that it will make GE its test target for this year.

Westinghouse Electric Corp. also is negotiating with the electrical workers. Both GE and Westinghouse have agreed with the union to extend the basic provisions of their labor contract for another year, but this does not rule out the union's right to strike over wages or other issues.

Says Increase Unnecessary—B. F. Fairless, president, United States Steel Corp., stated he did not believe a third round of wage increases necessary. Testifying before a joint congressional committee last week, Mr. Fairless said further wage increases will not "in the long run bring benefit to anyone. In my opinion, it will only result in further inflation and distress for many of our people."

Mr. Fairless and other steel executives denied that any agreement, "private or otherwise," had been made with the United Steelworkers prior to announcement of upward adjustments in semifinished steel prices.

Some Increases Granted — Meanwhile, the unions won a few wage increases in scattered industries. The Bridge & Structural Iron Workers Union-AFL in Cleveland signed an agreement providing for a 12½ cent hourly wage increase, raising the basic hourly rate of iron workers to $2.37¼. Plasters and lathers in Cleveland tentatively had accepted $1 a day increases, indicating formation of a pattern for building trades workers in that area.

In Bartlesville, Okla., the National Zinc Co. announced it had granted workers a 12½-cent hourly increase, retroactive to Feb. 1, and raising the minimum daily wage to $9.76.

Unions Press Demands — Leaders of organized labor have indicated they will not withdraw their demands for higher wages as result of recent declines in commodity prices and in the cost of living. Many of the major unions, including those having contracts with the steel, farm equipment and electrical industries, have not announced definitely how large an increase they will ask.

The steelworkers last week cold-shouldered the suggestion by industry leaders that third round increases be abandoned, reiterated their intention to press for substantial wage increases.

The Farm Equipment Workers-CIO will ask International Harvester Co. for a "substantial" wage increase at forthcoming negotiations.

United Office & Professional Workers of America-CIO have announced their intention of seeking a 25 per cent increase, or $15 a week, whichever is higher.

White collar workers at Westinghouse Electric Corp. will ask an increase of 20 cents an hour, a pension plan, and re-establishment of the profit-sharing plan which was discontinued in 1942.

January Work Stoppages Higher Than December

Work stoppages in January were greater than in December but less than in January last year, according to the Department of Labor. There were 175 work stoppages in January, involving 75,000 employees and causing a loss of 1 million man-days. This compares with 120 stoppages in December, involving 30,000 workers and causing a loss of 500,000 man-days and with 320 stoppages in January, 1947, involving 105,000 workers and causing a loss of 1,400,000 man-days.

During the prewar period, 1935-1939, an average of 170 stoppages started monthly, involving 62,000 employees and causing a loss of 1,010,000 man-days. January generally is marked by increased strike activity.

Molders Average $1.70 On Straight-Time Basis

Straight-time hourly earnings of machine molders in ferrous foundries averaged more than $1.70 last November in 12 out of 23 large cities studied by the Bureau of Labor Statistics. Average wages of floor molders and hand bench molders generally ranged between $1.50 and $1.70. Machine molders frequently are paid on an incentive basis whereas other molders are commonly paid on a regular time basis.

Foundry workers' wages increased about 10 per cent from October, 1946, to November, 1947, and about 30 per cent from January, 1945, to November, 1947.

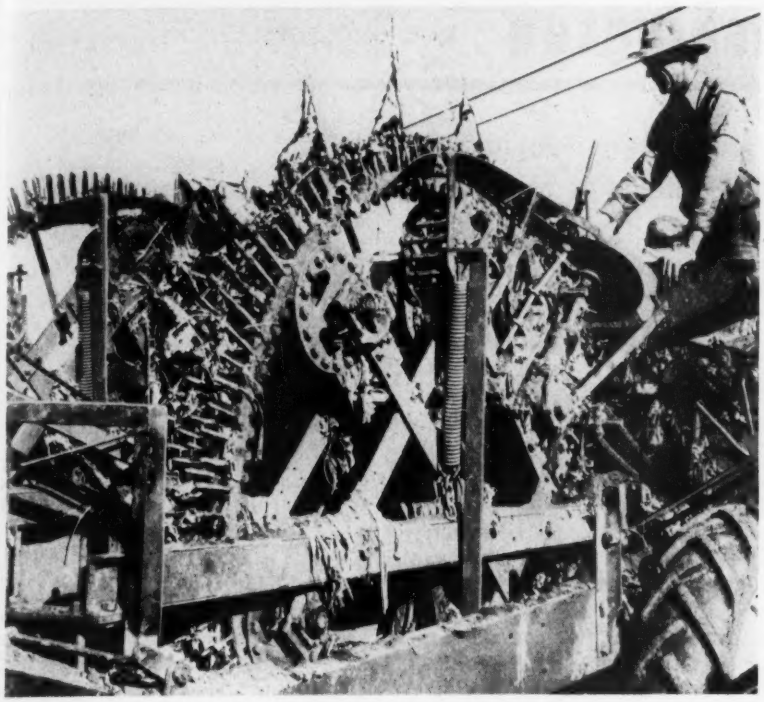
UAW Files Suit To Lift Political Activity Ban

United Automobile Workers-CIO has filed suit in federal court at Washington attacking the constitutionality of the Taft-Hartley law's ban on political spending by labor unions. The suit seeks a declaratory judgment that the act violates the constitutional guarantees of free speech, press, assembly and petition and asks an injunction to prevent the Justice Department from prosecuting union officials for violation of the labor-management act.

This court challenge is the second to be started by the CIO. The parent union invited criminal prosecution and then asked the political activity provision of the law be declared unconstitutional. CIO President Philip Murray was indicted Feb. 11.

Death Ends Career of Cleveland Industrialist

John R. Raible, Cleveland, a director of Penton Publishing Co., which publishes STEEL and other business papers, died here Mar. 3. He was 74, and was a native of Cleveland. Mr. Raible was president since 1907 of Fanner Mfg. Co., Cleveland, and from 1909 until recently had been an executive and chairman of Greif Bros. Cooperage Corp., Cleveland. In addition, at the time of his death he was a member of the boards of a number of companies in the Cleveland area.



SUGAR BEET HARVESTER: This recently developed sugar beet harvester is shown being tested by American Crystal Sugar Co. at Grand Forks, N.D. The machine lifts beets with shovels, picks them up on spiked wheels and carries them through knives before loading them on a truck. NEA photo

Await Report on Steel Needs

Chief interest currently in voluntary allocations program centers on petroleum industry's requirements. Tabulation is expected by Mar. 8

CURRENTLY chief interest in the voluntary steel allocations program centers on the National Petroleum Council's report on steel requirements for expanded petroleum production, refining and transportation program. This was due Mar. 1 at the Interior Department but the petroleum people still were holding meetings late last week so that the report was not expected to be ready prior to Mar. 8.

While no definite steel requests have been formulated by the Petroleum Council's Steel Requirements Committee, the tonnage asked for allocations coverage will be on the heavy side.

Farm Equipment Meeting—At the moment the only meeting scheduled by the Office of Industry Co-operation is Mar. 15 with the farm equipment industry for the purpose of ascertaining whether any steel and pig iron allocations requests are necessary to expand production of certain farm equipment, notably tractors.

The first public hearing in the voluntary allocations program will be announced in a few days and will take place in the third week of March on the basis of present indications. This meeting will be on the freight car program.

Scrap Problem—While no figures have been set up, an effort is being made to solve the problem by persuading the railroads to sell their scrap cast wheels to the foundries rather than sell them at highest prices in the scrap market.

A questionnaire has been sent to the foundries asking about their supplies of pig iron and scrap and about their actual requirements.

Reconditioned Mill Placed in Operation

Production of silicon steel in coils up to 15,000 pounds is under way at the Vandergrift, Pa., plant of Carnegie-Illinois Steel Corp. on a reconditioned 54-inch 1500 ft. per minute cold-reduction mill formerly operated at the company's Irvin Works. Up to 50 per cent increase in output of silicon steel is indicated at the Vandergrift plant by mid-summer, when installation of finishing facilities is scheduled to be completed. It will be necessary to continue a relatively small volume of silicon sheet output on the hand mills, notably for the higher silicon grades.

In addition to the 54-inch cold reduction mill, the company has installed one continuous annealing furnace at Vandergrift, with two others soon to follow for the annealing of the silicon steel in coils instead of packs as was the previous practice. Auxiliary slitting, shearing, temper rolling and other modern steel finishing facilities also have been added.

The sheet bar portion of the blooming and bar mill, five roughing mills, one finishing mill, and one of the plant's five galvanizing lines are being discontinued. Dismantling of the older facilities, and changes in hot mill practice will soon take place, affecting about 250 employees. These will be moved to similar jobs either at Vandergrift or other mills of the company in the district.

NMTBA To Report Tool Volume on Index Basis

National Machine Tool Builders' Association, Cleveland, is revising its method of reporting the industry's shipments, orders, cancellations and order backlogs.

The association's report on the January, 1948, volume of business will use an index figure for each of these totals, the basis for the index being 1939 shipments.

The change, NMTBA announces, is being made because shifts which have occurred in the industry in the postwar period render dollar totals less representative of the industry than they had previously been. Declining number of companies which report their figures to the association was the primary factor making the change advisable. Some firms have added new lines and are not as closely connected with the industry as they had been; others have been merged and a number have dropped out of the industry completely.

January's volume of new orders received was substantially larger than December's sales, according to the association, and cancellations dropped off during the latest month to the lowest level since the war.

Volume of shipments made by the industry in January, however, was far below the average for last year.

Windows of Washington

By E. C. KREUTZBERG *Washington Editor, STEEL*

Commerce Department tackles tough assignment in making "honest" forecast of steel requirements for future. Study to cover three periods

COMMERCE Department officials who will conduct the study of steel requirements over an indefinite period ahead readily admit they have drawn a tough assignment. Commerce spokesmen say they are no more adept at looking into the crystal ball and getting a preview of future developments than anyone in private industry. However, questions about the future steel demand are raised so often these days—especially by congressional committees—that it is becoming almost essential to be prepared with answers.

In planning the steel study, department officials have put in a lot of time in reviewing current methods of forecasting economic trends—as used both by private industry and research institutions, and by various government agencies. They have been impressed with the fact that the science of forecasting in recent years has undergone some development, with the result that some pretty good forecasts have been made of late; at the same time, there has been plenty of opportunity to draw conclusions as to why some widely publicized forecasts—as the government forecast of huge unemployment soon after the war—have gone haywire. Commerce officials hope to produce something worth while in reference to future steel demand by following two lines of approach: 1—To be at all acceptable the job will have to be broken down into small chunks, and 2—the job will have to be based on the assumption that there will be no cataclysmic events such as war, pestilence and famine to upset conclusions. If war comes, all expectations would be changed anyway.

Follow Market Classifications — The study will be broken down at the outset into each of the industry classifications listed in the American Iron & Steel Institute's tabulation of steel consumption, and perhaps the first to be selected will be the container industry. The department will make a thorough study of container requirements and to this end will study food production and consumption trends, the probable food exports in future years—and compile similar information on other container uses. Trends toward alternate container materials will be noted—as glass, paper, etc. Probable food production abroad will be allowed for. The result should be a fairly dependable forecast of the amount of steel that should be consumed in future years in the manufacture of containers. Just how the compilation will look cannot yet be answered but refinements in the figures probably will suggest themselves as the job goes along. For example, the device of setting top and bottom limits to allow for uncertain variables probably will be employed.

Starting as soon as possible, parallel studies will be made in other sectors —as steel requirements for various types of construction, for shipbuilding, for export, for automobile production, for construction of different types of machinery, for production of military materiel, for mining, petroleum production and refining, etc.

No Propaganda — Commerce approaches this study without thought of serving any propaganda purposes —such as to produce figures to prove that steelmaking capacity should be increased quickly to 110 million tons a year or some other level. The emphasis will be on tabulation of strictly factual estimates—that is, "honest" figures.

In setting about the task, Commerce will study future steel demand over three separate periods. The first period will cover the four years of the Marshall Plan, to the end of 1951. This period is to be considered separately because it will be a period of abnormal demands. The second period will cover the 5 years 1952-1956 inclusive; this period was separated because it should be a period of return from abnormal to "normal" conditions of economic activity. The third period to be studied will be an indefinite period beyond 1956.

If difficulties are encountered in setting up estimates for the first two periods indicated, they probably will be nothing in comparison to the difficulties that will be encountered in estimating for the third period. Study of the third period will be undertaken after the first and second periods have been covered.

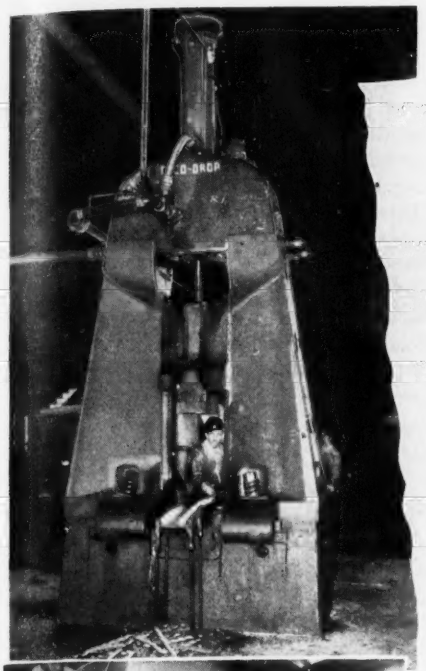
Directed by McCoy—The whole project is under direction of H. B.

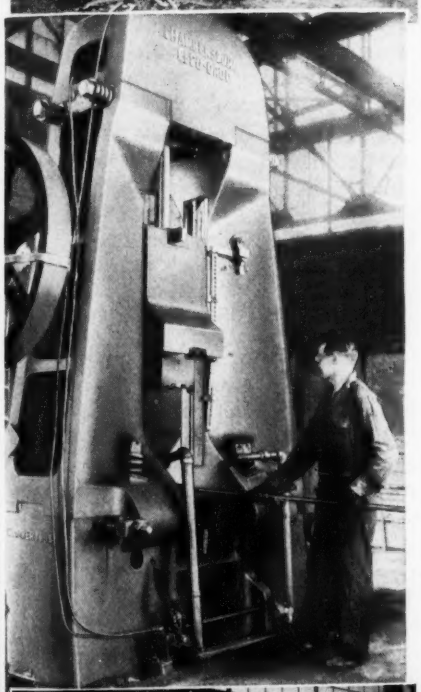
WILL FORECAST FUTURE STEEL REQUIREMENTS

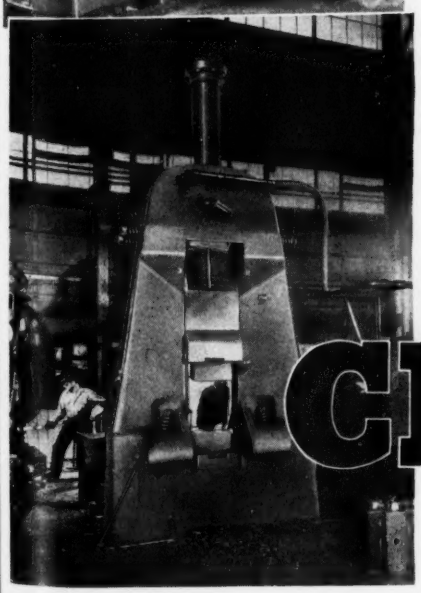
H. B. McCOY

R. MATTHES

Dr. ROBERT M. WEIDENHAMMER







Orders and re-orders prove it!

The statement that the Ceco-Drop makes other gravity drop hammers obsolete may have seemed over-enthusiastic a year ago when this new hammer was introduced. But the experience of forge shops which have installed Ceco-Drops—and ordered more—is the best evidence that the statement is simple truth. As the facts are known, the list keeps growing.

Write for these facts

CHAMBERSBURG ENGINEERING CO., CHAMBERSBURG, PA.

CECO-DROP

CHAMBERSBURG
Builders of IMPACT Machinery

McCoy, director of the Office of Domestic Commerce, with two of his right-hand assistants entrusted with the actual work. R. Matthes is to serve as co-ordinator of the steel demand study, while Dr. Robert M. Weidenhammer will have active supervision of the execution of the plan.

No estimates have been made as to how long it will take to do this job; it may take a considerable period, not only because of the scope of the job itself, but because of the frequency with which these men are called upon to perform special chores in connection with the Marshall Plan, voluntary allocations, etc.

Halcomb Named to OIC

Charles Halcomb has been appointed assistant to Melvin W. Cole, chief of the Iron & Steel Division, Office of Industry Co-operation, Department of Commerce. Like Mr. Cole, Mr. Halcomb is a War Production Board veteran, having served in the WPB Steel Division in 1941-45, inclusive. After that he served in the Civilian Production Board until June 30, 1947, and since then has been inactive. Mr. Halcomb for 20 years was district sales manager in Philadelphia for the Procter & Gamble Co. Before that he was with the United States Steel Corp. and previously had been in the railway supply business.

Appointment of eight other staff members to the OIC organization also has been announced by Director John C. Virden.

The appointments are: Horace G. Reed, chief legal adviser; Charles L. Foutz, consultant, industry relations; Clifford A. Hahn, consultant, petroleum, gas and oil equipment; Mathias W. Niewenhous, consultant, building materials; A. K. Tigrett, consultant, transportation equipment; Earl W. Clark, chief, departmental mobilization staff; Nelson C. Pierce, congressional liaison officer; and G. Raymond Meade, who will assist Mr. Tigrett.

Mr. Reed was formerly deputy commissioner of the Office of Foreign Liquidation Commissioner in the State Department before coming to OIC. He was a member of the New York law firm of Sullivan & Cromwell from 1920 to 1945. Mr. Foutz was with the U. S. Rubber Co. from 1919 until his retirement in January, 1947. Mr. Hahn has been an industrial executive and engineer with New York, Boston and Pittsburgh companies. During the war he served in an advisory capacity with the Bureau of the Budget and WPB.

Mr. Niewenhous entered government service in 1940. He has served with the WPB Lumber Division and Forest Products Division, Civilian Production Administration. Mr. Tigrett has been an investment banker and industrialist in the South. Mr. Clark was formerly director of the Division of Liquidation in the Department of Commerce. He has held various federal and Illinois state government positions. Mr. Pierce for the past five years has been in the federal service, acting as a congressional liaison officer for OPA.

Krug Plan Shelved

Passage of S. 134 and H. R. 2161 is regarded as definitely shelving for this session of Congress the recommendation of Secretary Krug for expenditure of $9 billion of public funds on synthetic fuel development plants over a 10-year period. This is the plan that called for 16 million tons of steel over the 10-year period. It called for establishment of plants with capacity for producing 2 million barrels of fuel oil per day, mainly from coal.

Under the action taken by both houses, the $30 million voted in 1944 for synthetic fuel development over a 5-year period ending in 1949 is to be increased to $60 million for an eight-year period ending in 1952. Conferees have only one difference to iron out—that is the House bill provision allowing expenditure of up to $1 million to promote secondary petroleum recovery from old exhausted wells.

Senate Version Favored

The conference committee working on the two versions of extension of the Second Decontrol Act of 1947 is expected to adopt the Senate, rather than the House, version. The House voted a 30-day extension beyond the present Feb. 29 expiration date whereas the Senate voted a 90-day extension. That will allow time for more mature control legislation over the next three months.

The Second Decontrol Act is the one that authorized distribution and use controls over tin and tin products, antimony, cinchona bark, quinine and quinidine; authorized import controls over fats and oils, rice and rice products, nitrogen fertilizer and pig tin; and authorized controls over rail transportation and over exports. Extension of the export controls and the rail transportation controls already had been carried forward by previous legislation to Feb. 28, 1949.

Hanson To Be Steel Consultant

To enable the Office of Domestic Commerce to function more effectively in advising the Office of Industry Co-operation regarding contemplated allocation programs, Director H. B. McCoy of ODC has retained a special steel consultant. He is Elliott S. Hanson, for many years with the United States Steel Corp. and its subsidiaries, and more recently until its liquidation in 1947, president of the International Training Association, a creation of the Co-ordinator of Inter-American Affairs to assist young Latin Americans in obtaining technical training in the United States. Mr. Hanson will assist Mr. McCoy in forming opinions as to how contemplated steel allocation requests would, if carried out, affect the domestic economy.

Resources Mobilization

Arthur M. Hill, chairman, National Security Resources Board, recently met with the Small Business Advisory Council of the Department of Commerce to discuss small business participation in resources mobilization.

Also discussed was the experience of small business in World War II in the production, service and distribution fields, and how such experience could be more effectively utilized in the event of another emergency.

Name Purchasing Advisers

Eight Americans distinguished in industry, education and government have been named as the Advisory Committee to the newly formed National Academy for Public Purchasing. Interim Chairman Clifton E. Mack, director, Bureau of Federal Supply, said the members will advise on policy matters for the academy. They are:

Phillip Young, dean, Business School, Columbia University; Emery Olson, dean, School of Public Administration, University of Southern California; Walter Kirkman, director, Department of Budget & Procurement, State of Maryland; Harry Erlicher, vice president, General Electric Co.; John R. Steelman, assistant to President Truman; William C. Foster, under secretary of commerce; Albert Browning, vice president, Ford Motor Co.; W. Z. Betts, director of Purchase & Contract, State of North Carolina.

It is estimated the federal government spends over one billion dollars a year in supply operation. The National Academy for Public Purchasing will act as a focal point for the distribution of latest information on purchasing techniques used by industrial, as well as governmental, purchasing officers.

Drouth To Cut Power Supply In California

SAN FRANCISCO

NORTHERN California's worst drouth in history is expected to have a far-reaching effect on business and industry.

Since the present rainy season began in October, less than half the normal rainfall has fallen on the state's most productive areas, and snowfall in the mountains, which provides energy for hydroelectric generators and water for irrigation canals, has been only a fraction of normal. Reservoirs in the mountains now contain less than half of their normal water storage.

Although heavy rains this spring could ease the emergency, utility and agriculture experts say that it's now too late to offset many harmful effects of the drouth. Moreover, prospects of heavy rains during the remainder of the season are believed to be unlikely.

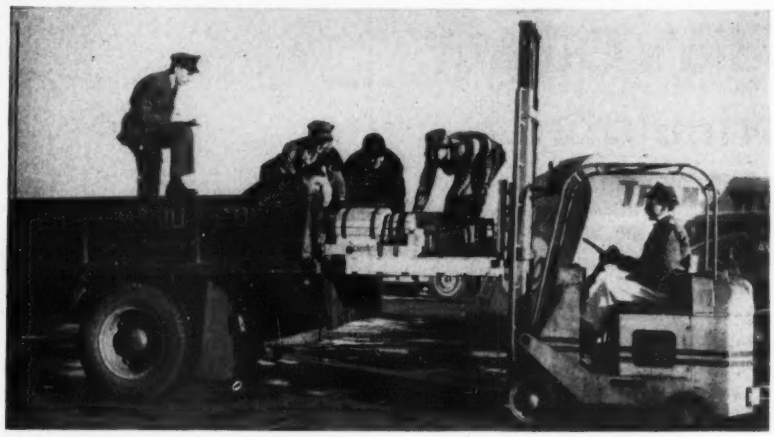
Hits Metalworking Plants — Well up toward the top of the list of industries which will be hit, directly and indirectly, are steel and other metal producing and fabricating enterprises.

For example, the drouth will seriously reduce California's production of fruits and vegetables. The result will be a smaller demand for tin plate.

Smaller crops also will mean reduced purchasing power for California's farmers. That will mean a curtailment in spending on farm tools, farm construction, etc., thus reducing the demand for the metals which go into such products.

Raises Oil, Gas Demand — An indirect effect will come from the increased drain on oil and natural gas, now needed in larger quantities to produce electricity in steam generating plants. Last summer many industries, including foundries and metalworking plants, were hampered by shortages of oil and gas. This situation may become worse this year.

Meantime, steps to alleviate the blow of the drouth are affecting all northern California industries. As part of a move to save electricity, industries, as well as farmers, have been forced to reduce their use of electricity by 10 per cent. Although the order has just gone into effect and it's too soon to gage the result, it is believed it will slow down manufacturing activity in many instances.



ROLLS SHIPPED BY AIR: Griffin Mfg. Co., Dallas, Tex., maker of electrical switch boxes, recently faced a shutdown for lack of new rolls for a mill used for reducing steel plate to 16-gage sheet. Mackintosh-Hemphill Co., Pittsburgh, produced the rolls in record time, loaded them aboard an air liner and they arrived at the Dallas plant the same day shipped

Other emergency measures have been put into effect. Outdoor lighting has been banned or reduced, and the state this summer will go on daylight saving time. Line voltages have been reduced and the cycles per second of alternating current have been cut. Both are means of saving power. Other, more severe, emergency measures are expected if the drouth grows worse.

Geneva Steel Awards Construction Contract

Geneva Steel Co. has awarded a $3 million construction contract to the Walsh Construction Co., of Davenport, Iowa, for conversion of its plate mill to production of hot-rolled coils.

The contract is part of Geneva's overall postwar conversion program, designed to increase the mill's output of civilian products.

The Walsh company will do foundation work for extension of the plate mill, electrical and pipe work and installation of machinery and equipment.

Barring unexpected setbacks, conversion of the mill is expected to be completed before the end of this year.

New Plants, Expansions Start in California

New industrial developments in northern California announced in January included 32 new plants costing $2,362,000 and 25 expansions of existing plants to cost $8,638,000.

Among the larger projects are the following: Butler Mfg. Co., a new steel fabricating plant, $250,000; American Thread Co., a new $250,000 plant; Best Foods Inc., a $1,250,000 plant expansion; Pacific Paint & Varnish Co., $250,000 addition to its paint factory; L. E. Niles Co., a new $100,000 plant for manufacture of adjustable stock bins for the auto trade; Blake, Moffitt & Towne, a $400,000 expansion of a paper processing plant; and California Packing Corp., a $200,000 plant addition.

Way Opened for Lone Star Purchase of Leased Units

Way has been cleared for Lone Star Steel Co., Dallas, Tex., to purchase from War Assets Administration the Daingerfield, Tex., pig iron plant and Oklahoma coal mines it now operates under lease.

Debenture holders of the company have waived any objection to the issuing by Lone Star of $2 million worth of new debentures so that the firm may exercise its option to buy the properties by a down payment of $1,500,000. One provision of the option requires that Lone Star have a $500,000 cash operating fund. Indications are that Kaiser-Frazer Corp. may take part in the transaction when the new debentures are put up for sale. The Willow Run, Mich., automobile manufacturer has already contracted to purchase eight per cent of Lone Star's pig iron output.

Lone Star had previously announced it hoped to purchase outright the East Texas ore properties and the Oklahoma mines and to double production of pig iron.

Plan To Boost India's Output Formulated

JAMSHEDPUR, INDIA

COMPROMISE solution to the long-lived controversy between private enterprise and nationalized industry was reached at the recent Industries Conference held under the auspices of the Indian government at New Delhi.

All three types of industries—state-owned, privately owned and jointly owned—will have their due place in India's economy, according to a resolution adopted at the conference.

In choosing how an industry should be run "the paramount consideration will be the country's basic economic and defense requirements on the one hand and the possibility of quick and efficient production on the other."

Central Planning Recommended—The resolution also recommends that the government keep in view the need for equitable distribution of the country's wealth, the need for fullest utilization of the country's resources without allowing wealth to accumulate in the hands of any segment of the people, and the need for central planning, co-ordination and direction "so as to obtain the maximum efficiency and output."

A comprehensive resolution on industrial production, presented by J. R. D. Tata, recommends an increase in movement of coal by 4 million tons a year, fullest utilization of all forms of transport, special assistance for increased production and increased imports of essential raw materials, planned utilization of industrial raw materials in short supply, expansion of railway transport capacity, erection of new steel plants, expansion of cement production, installation of ancillary power stations and the setting up of a Central Advisory Council, a Priority Board and a Planning Commission or Development Board.

The increase of capacity and production in certain industries, for which plans have been approved and are under execution, should be pressed forward with vigor, according to the resolution. These measures were recommended:

Railways—The capacity of rail transport should be increased to meet prospective demands for movement of constructional materials, fuel, raw materials and finished products. The import of locomotives and freight cars should be given high priority, and existing capacity for manufacture should be developed so as to insure self-sufficiency at the end of a three to five year period.

FOR BRAZIL: The S. S. Loide-Peru, last of a series of 14 cargo vessels constructed by the Ingalls Shipbuilding Corp. at Pascagoula, Miss., for the Brazilian government is launched after christening by Mrs. John R. Steelman, wife of the assistant to President Truman

Steel—New steel plants should be erected and brought into production, and in the meantime every effort should be made to import the country's essential requirements in iron and steel.

Cement—The approved plan for cement production should be hastened to completion so that this important material becomes available for building new industrial plants.

Coal—The recommendations of the Indian Coalfields Committee regarding acquisition of mineral rights, planned and co-ordinated development of production in new areas, regulation of use and distribution, and creation of suitable executive machinery must be implemented early so that growth of the coal industry can be facilitated.

Oil — To reduce dependence on foreign countries, prospecting for oil should receive increased attention and the possibility of producing substitutes from coal should be investigated. In addition, legislation to insure fullest utilization of power alcohol produced in the country should be enacted.

Representative Group Called—The conference was called at the instance of the government, at which, beside the representatives of the government, representatives of labor such as the Trade Union Congress, the Indian National Trade Union Congress, and the Indian Federation of Labor, together with representatives of employers, were present.

The main object of the conference was to devise measures to check the serious fall in production which has taken place since the end of the war.

One of the factors responsible for this decline is the prevailing spirit of labor unrest, resulting in strikes, lockouts and slow-down tactics. Without seeking to fix blame, the conference felt it was of utmost importance for the country as a whole to check this fall in production.

To this end a resolution providing methods for increasing the degree of co-operation between labor and management was drawn up and adopted. The conference's recommendations included the following:

1. That the fullest use be made of statutory and other machinery for resolution of industrial disputes, and that where no machinery exists it should be set up immediately and should be as uniform as possible.

2. That machinery should be established on central, regional and functional levels for the study and determination of fair wages and conditions of labor, and fair remuneration for capital, and to assure that labor has a voice in all matters concerning production.

3. That each plant form Works

Committees to settle disputes which may arise.

4. That, as a first step toward improving the standard of living of workers, immediate attention be given to the problem of housing; the cost of such housing should be shared in suitable proportions between government, employers and labor.

Having enumerated these principles, the conference called on "labor and management to agree to maintain industrial peace and to avert lockouts, strikes or slowing down of production during the next three years."

Acting on the recommendations of the conference, the government is setting up central, provisional, regional and unit production committees. In each factory, a committee consisting of equal numbers of representatives of management and labor and of a specified number of independent persons selected by the government will be organized. This elaborate machinery is intended to iron out differences by means of direct negotiations at the start, failing which the disagreement is to be taken to the Conciliation Board and Arbitration Tribunal as provided for in the Trade Disputes Act.

Seek British Advice for India's Steel Expansion

Technical consultants are being sought by the Indian High Commissioner's Office in London to advise on the contemplated expansion of the Indian steel industry.

The experts, who will be selected from British industrial organizations and associations, will be called on to select suitable sites and supervise design of new steel plants with capacity of a million tons a year.

Heads Committee To Study Export Complaints

Sen. Edward Martin (R., Pa.) has been appointed to head a new Export Subcommittee of the Senate Small Business Committee, which will investigate complaints from smaller exporters, who have protested the new export policies of the Office of International Trade (Department of Commerce) will completely eliminate the smaller, independent business man in the export trade.

Protests are against: (1) Use of price criteria in granting export licenses; (2) unusual powers of recommendation which may be permitted foreign governments in designating the American exporter; and (3) extension of export controls to include all commodities (whether scarce or in long supply) going to Europe.

Some Britons Face Steel Cuts

Failure to meet export quotas will result in reduction of allocations to some autobuilders. Steel expansions to add 400,000 tons of capacity this year

BIRMINGHAM, ENG.

POSSIBILITY of some British automobile manufacturers being forced to close down or to transfer to other light engineering work was mentioned by the British supply minister when dealing with the question of steel allocations recently.

Among firms contributing 10 per cent of the industry's total production, he said, were some which would run into difficulty in meeting their export quotas. If they are unable to fulfill their quotas within a reasonable time, perhaps six months or less, their steel allocations will be reduced.

The British autobuilding Big Six are not among those affected, he declared, adding that the industry as a whole has had an increase in steel allocations. Those firms likely to be affected are small ones employing comparatively few people. It is expected they would be capable of undertaking any form of light engineering work for which there is great demand.

Mills Work To Keep Current—The country's heavy rolling mills are actively engaged on priority work, and in view of the fact all orders not completed by the end of the present quarter are due for cancellation, makers are clearing up as much as possible.

Shortages continue acute in the reroiling industry. Imports are received on only a small scale, a minor fraction of what was received prior to the war. Plants are standing idle in the Midlands because of the lack of soft billets and sheet bars, and no early relief in the situation appears in prospect.

Heavy steel is wanted for industrial purposes, particularly for new generating stations throughout the country. Railroads are badly in need of rails and new rolling stock, and local freight car builders have overseas commitments which will absorb large tonnages of steel.

Steel Requirements Expanding—The National Coal Board, now in charge of all coal production, is in need of steel for repairs and maintenance of pits. Mechanization has been extended to many collieries during the last few years and this trend has increased the call for steel for mining equipment.

Production of pig iron, which in January was at an annual rate of 8,726,000 tons, has increased about 25,000 tons a week over January of last year, although the number of blast furnaces in operation, at 100, has remained constant. Bulk of the iron produced, however, goes into steelmaking with foundries receiving only a fraction of their requirements. Makers of light castings, for example, are fully booked and although building construction has been curtailed at the instance of the government, foundrymen note little abatement in casting demand, particularly for export.

Steel Capacity Enlarged—A total of 24 projects for expansion or modernization of the steel industry which will increase capacity by 400,000 tons is scheduled for completion this year. Provided raw materials and fuel are available in sufficient quantities, it is possible 15 million tons of steel could be produced a year.

A campaign to increase supply of scrap, which has become increasingly tight, has been inaugurated. Estimates this year indicate imports of scrap from Germany should reach one million tons, but so far this quarter importations are far below schedule.

Nikoh Tube Co. To Open New Chicago Plant Soon

Electric welded steel tubing ½ to 6 inches inside diameter, electrical conduit ½ to 2 inches and oil line pipe from 3 to 6 inches will be manufactured at the new Chicago plant of Nikoh Tube Co., scheduled for completion by Apr. 1. Covering an area of 100,000 square feet, the mill will ultimately have a yearly capacity of 200 million feet of tubing and 280,000 tons of pipe.

Manufacturing processes will be closely integrated, from coil slitting to automatic cut-off. Once the strip steel is under way, it will not be removed from the production line even for cleaning. According to Harry J. Mokate, sales manager, exterior and interior pipe surfaces will be descaled by a Nikoh-developed process.

Tubing in various shapes, round, hexagonal, octagonal, bedstead, etc. will be manufactured from 0.150 to 0.012-inch steel; pipe is to be formed from 0.307 to 0.125-inch stock. The company is equipped to furnish both products in lengths up to 40 feet.

3 TONS N-A-X HIGH-TENSILE
4 TONS CARBON SHEET STEEL

Switch to N-A-X HIGH-TENSILE. Utilize its greater strength and corrosion resistance by designing lighter sections. Boost production per ton as much as 33%. Get a stronger, longer-lasting finished product.

GREAT LAKES STEEL CORPORATION
N-A-X ALLOY DIVISION • DETROIT 18, MICHIGAN
UNIT OF NATIONAL STEEL CORPORATION

MAKE A TON OF SHEET STEEL GO FARTHER
Specify—
N-A-X
HIGH-TENSILE STEEL

The "New Arithmetic in Steel"
- makes every fourth part a Bonus part

COPYRIGHT 1948 GREAT LAKES STEEL CORP.

By A. H. ALLEN *Detroit Editor, STEEL*

Mirrors of Motordom

Kaiser-Frazer economy moves and failure of its proposed stock issue seen as early portents of fading bloom in auto market

DETROIT

CAGEY watchers of the automotive scene have been trying to dope out just what is happening to the Kaiser-Frazer empire and come up with conflicting deductions, most of which, however, point in the direction of a return to a buyers' market in automobiles. The strange goings-on in connection with the proposed $17 million K-F stock issue now are appearing only corollary to the main issue, since the company was able quickly to reinforce its working capital with a $10 million loan from the Bank of America, only a couple of months after it had repaid ahead of time the balance on a previous $12 million loan from the same source. As far as any new stock is concerned at the moment, prospects are dim, since the market value of K-F common skidded below $9, and it had been proposed originally to issue 1,500,000 new shares at around $13.

Last week a major shakeup was in process at Willow Run. The entire night shift of more than 3000 was laid off, plus about 800 more at the company's Detroit engine division. Production schedules were cut back from around 1000 daily to no more than 750. All operations were halted for most of the week to effect the change. The official explanation of the move was that it was planned in the interests of "economy." This is altogether true, since from its inception the night shift at Willow Run proved woefully weak on productivity, despite premium pay. Meanwhile inventories were being built up in line with the projected daily schedule of 1500. One day recently there were 250 railroad cars and 56 truck-trailers lined up at the plant awaiting unloading.

Kaiser Optimistic — Edgar F. Kaiser, general manager, continues optimistic, at least in public. He believes spring weather will loosen up sales and prevent choking up dealers with new cars. Not all his dealers echo his sentiments. Many feel a substantial price reduction, say $250-$300, will be necessary to move cars. Company officials, on the other hand, maintain their 4000 dealers have an average of only 5-6 cars each. Figures for 1947 show Kaiser-Frazer registrations of around 100,000, against production of 145,000, well below the proportion of most other manufacturers.

There is no gainsaying the fact things are going to get progressively tougher for the Willow Run producer. Used car prices have been tumbling in recent months. The competition is getting caught up on backlogs of orders and in scattered instances is finding a lot of water in order books. In pricing their cars, Kaiser-Frazer hit with everything they figured the traffic would bear. Thus there were no K-F cars selling at premium prices during the spree of the past two years on used car lots, while other makes were going at $300-$1000 over factory list prices. And it was common knowledge that in most areas Kaiser-Frazer dealers would pay the high dollar for trade-ins, and would often sell new jobs as demonstrators at a couple of hundred dollars off list prices.

Kaiser-Frazer can earn good money at present prices and on single-shift production. The take was $22 million in 1947, and January profit was estimated in excess of $2 million. However, on the face of it, a $300 price cut, if borne entirely by the manufacturer, would erase this profit and put operations in the red, so the policy at the moment is to hold everything and see if the new car market sprouts in the spring as usual.

Bloom May Be Off—You get an increasing number of comments around Detroit that the bloom may be off the car market as it has been known since 1945. No tangible proof exists; rather it is an uneasy feeling that things can change fast and may be in process of changing right now. The situation is illustrated by the case of a new car dealer who was asked whether he had made any recent "screening" of his new car orders to see how many remained valid. He replied that he had not, that he didn't want to know the truth.

Other than the production cutback at Kaiser-Frazer, there is no reflection of any gloom in automobile assemblies which bounced back close to the postwar weekly high, following the resumption of gas service to Detroit plants. Output, however, is not likely to improve to any extent, since a tapering in Ford operations is in process and other manufacturers are near their practical limits.

General Motors, it appears, has definitely concluded that prewar dreams of a 50 per cent expansion over the 1941 peak is impossible of realization, either now or in the future, and is adjusting its organization accordingly. Layoffs in the corporation's staff in the General Motors building here alone in the past year or so numbered in excess of 1000, and there has been an appreciable weeding-out of nonproductive personnel in the GM plants throughout the country. New assembly plants, such as the Chevrolet unit at Van Nuys, Calif., and the Buick-Olds-Pontiac branches at Wilmington, Del., and Framingham, Mass., were too far along to be suspended and hence will be brought into production, but not nearly to the extent that had been planned originally.

Admit Overoptimism — Top GM officials now have to admit their over-optimism with respect to the postwar market, but certainly they were not alone in this respect, and the economy of the country as a whole is probably better off with

Automobile Production

Passenger Cars and Trucks—U. S. and Canada

	1948	1947
January	442,930*	366,205
February	396,674*	393,636
March		443,588
April		445,137
May		404,191
June		421,466
July		400,944
August		364,478
September		444,501
October		461,536
November		417,493
December		492,109
12 mos.		5,055,284

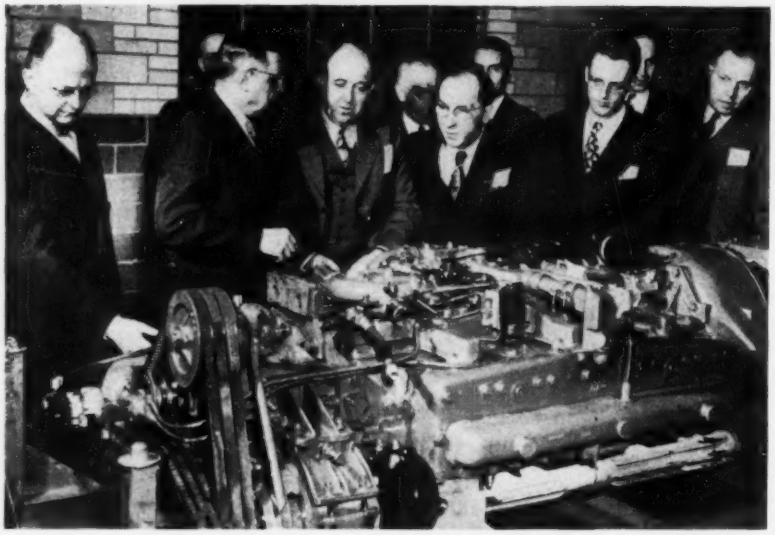
* Preliminary.

Estimates for week ended:

	1948	1947
Feb. 14	83,996	97,276
Feb. 21	110,536	103,400
Feb. 28	119,425	105,175
Mar. 6	120,000	105,496

Estimates by Ward's Automotive Reports

(Material in this department is protected by copyright and its use in any form without permission is prohibited)



ON TOUR: Members of the Cleveland section of the Society of Automotive Engineers inspect the latest 12-cylinder horizontally opposed engine used in busses built by White Motor Co., Cleveland. Left to right (front row): W. C. Johnson, Goodyear Tire & Rubber Co.; W. C. Naegel, general manager, White's Coach Division; R. L. Weber and A. B. Davies, Berea Bus Lines, Berea, O.; D. W. Harmon, Goodyear Tire & Rubber Co.; and R. F. Schaefer, Aluminum Co. of America

over-optimism than with pessimism. Even the confirmed optimists did not measure up to the pipe dreams conjured by union leaders and many government officials. The latter are due for a rude awakening inside of the next year, according to the calculations of experienced observers.

Getting Along with Foremen

Last fall Ford Motor announced a 17-point management relations program designed to improve relationships with foremen. Most of the proposals have been carried out and appear to have brought a vast improvement in the lot of foremen at Ford plants. Management relations representatives have been assigned to handle individual problems of foremen, revise wage structures, remove inequities and provide for merit increases, and vacation policies have been liberalized. News letters and information bulletins are being distributed regularly to all members of supervision, and supervisory dinner meetings have been planned for all the company's plants, twice a year.

On the job, foremen now find time clocks no longer need be punched by members of management. Special parking facilities have been set aside at a cost in the Rouge plant alone of more than $83,000. Foremen have been given special opportunities to purchase new cars, will carry identification cards instead of metal badges, will have private lockers beside their desks, will sport special coverall coats and will have separate eating places wherever practicable.

Radiators Via Assembly Line

Ford has developed a completely mechanized process for the manufacture of radiators for 1949 models, with assembly line techniques making what is believed to be the industry's first fully conveyorized line for volume production of radiators.

Illustrative of improvements in manufacture is the procedure by which radiator inlets and outlets are formed. Formerly these parts required five separate press operations with three annealing cycles alternated between drawing operations. The entire process, from disk blank to finished part now is completed in a single ten-station progressive die press. After passing through states of drawing, piercing, forming and beading, finished parts are deposited automatically on a conveyor which carries them through a gas-fired annealing furnace.

Basic methods have been retained but they are rearranged, simplified and mechanized to provide straight-line flow of parts to subassemblies, final assembly, testing, inspection, painting and shipping. A laborious operation of individually fluxing each assembled radiator core by hand has been replaced with a rotary fluxing fixture. Utilizing a conveyorized, gas-fired soldering oven, the top and bottom ends of the radiator tubes are soldered to the top and bottom headers by an automatic process which eliminates manual handling and bench operations. Automatic soldering is said to be new to radiator manufacture. Fifteen different assembly operations which follow the soldering of the top and bottom headers, all of which formerly were performed by handling the work at benches, are now accomplished while the work is traveling on a merry-go-round type assembly conveyor.

Some of the plant conversion operations incident to new models, now under way or about to proceed at the Ford plants, are as follows:

Plastics Building — Riggers are moving machinery to new and more convenient locations, involving about 25,000 man-hours of work.

Spring and Upset Department—About 85,000 man-hours are needed to move oil pan and flywheel housing jobs to the new Mound Road division, including the transfer of 228 machines and presses.

Cold Heading Building—Complete new installation for construction of frames will require moving of presses from rolling mill and installing new presses and conveyors, involving 128,000 man-hours.

Gear and Axle Department—Removal of 453 machines and rearrangement of 741 others will take 90,000 man-hours.

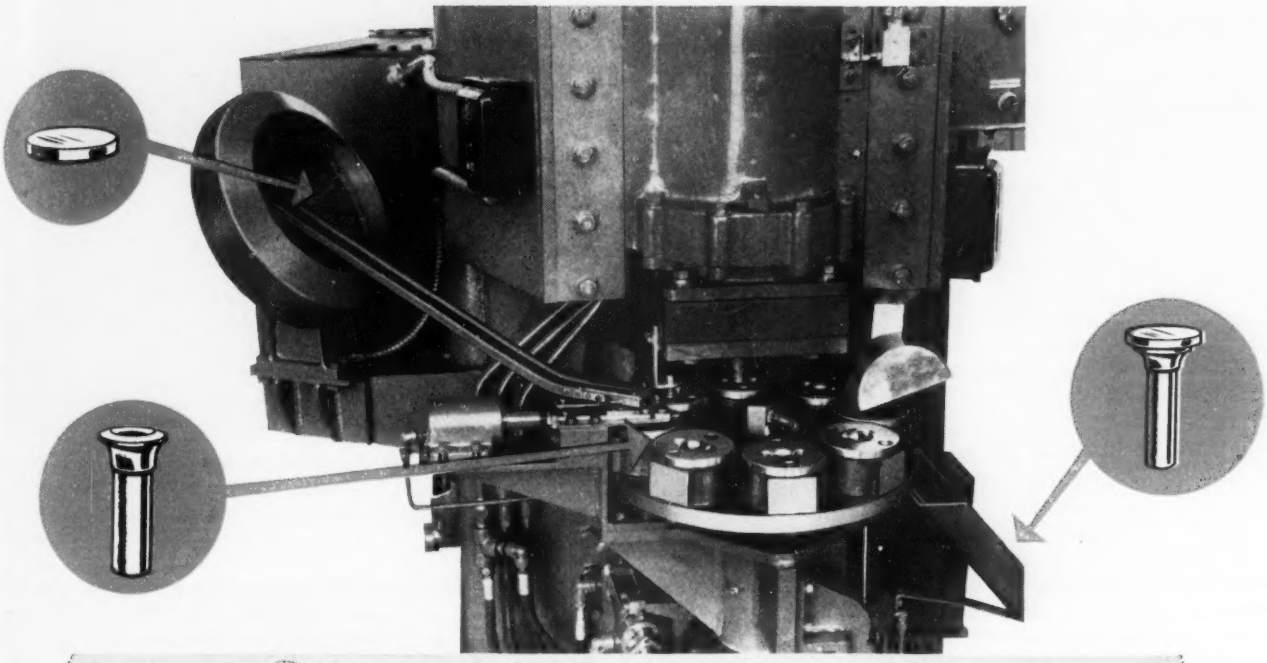
Pressed Steel Department—Project included filling in 67 press holes, framing 19 openings and erecting 105 bays of floor supports, as well as installation of air piping on 118 sets of dies and 42 die cushions, calling for 47,000 man-hours.

"B" Building—Largest job of the group, requiring 188,000 man-hours to convert entire Ford and Mercury final assembly lines to new models.

Packard Hits Peak

Packard closed the month of February with the highest weekly production total since the end of the war—2087—hinting that the materials supply problem is well on the way toward solution. There is no confirmation of the possibility that Packard may be the auto company reportedly tied up with the deal for a Pittsburgh syndicate to operate a rolling mill of Follansbee Steel Co., although it is known that in recent months Packard has been making strenuous efforts to reinforce its flat-rolled steel supply which has bottlenecked body production at Briggs Mfg. Co. Packard at one time was mentioned as active in a plan to acquire some of the properties of Andrews Steel Co.

MODERN PRODUCTION ARITHMETIC by Federal



+ + FEDERAL WELDER = 1200 PER HOUR

UNUSUALLY HIGH PRODUCTION of over 1200 gasoline engine push rod assemblies per hour with one operator is being performed on Federal's new Automatic Dial Feed Hydraulic Projection Welder.

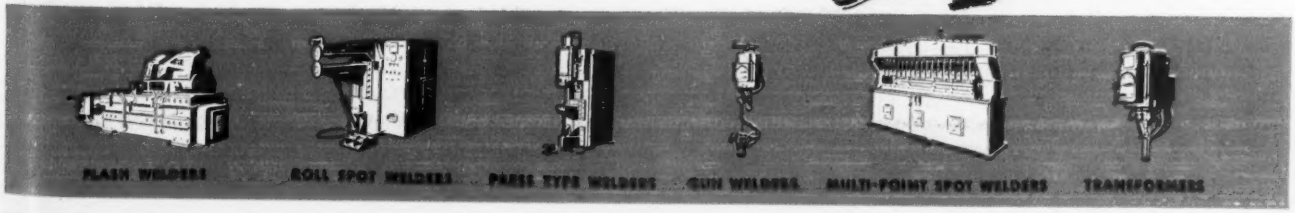
Operation of the machine is simplicity itself. Alloy steel discs are dumped into the motor driven hopper, the machine is started, the control panel is set and the operator manually feeds the semi-hollow, cylindrical stems into the rotating, automatic-indexing dies.

The machine does the rest; feeds discs into loaded dies, clamps discs in position, welds discs to stems and ejects completed assembly into chute. Welding is performed in a single pass.

This is another example of the time saving, profit producing possibilities of Federal Resistance Welding. Let Federal show you how special dies, jigs and fixtures can be coordinated with resistance welding to increase your production. Write today for further information, or better still, arrange a free consultation with one of Federal's qualified engineers.

THE FEDERAL MACHINE AND WELDER COMPANY
DEPT. 4117, PLANT 2, WARREN, OHIO
Offices in principal cities

SEE COLOR FILM OF THIS WELDER
WRITE TODAY



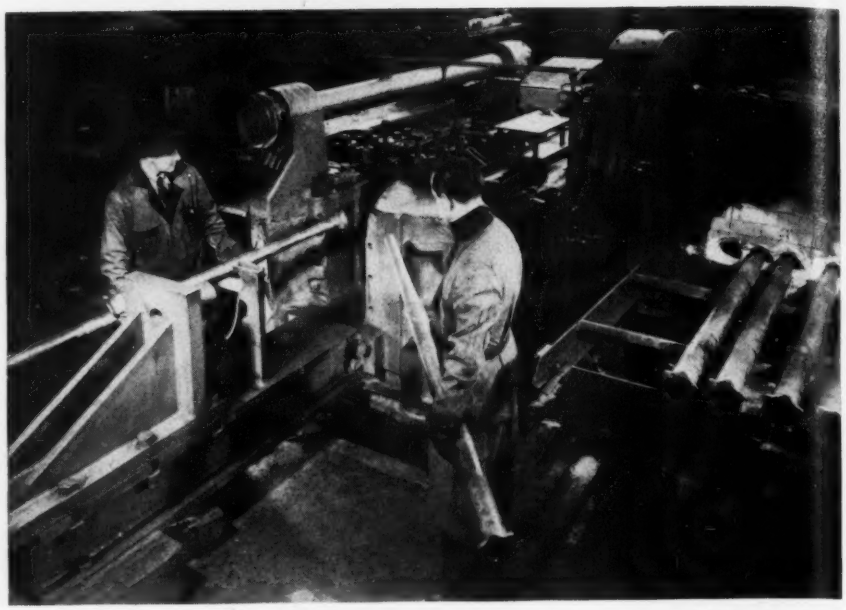
Standard Tube Occupies New Detroit Plant

IN LESS than ten months after selecting a site, Standard Tube Co., Detroit, formally celebrated occupancy of a completely new manufacturing building and office at 24400 Plymouth road, on the far west side of the motor city.

For many years the company leased space in the Ford Motor Co. Highland Park plant, and notice to vacate this property was received the latter part of March a year ago. After studying various existing plants and finding them unsuitable, it was decided to build a new structure designed specifically to meet present requirements and to provide facilities for future needs of welded tube production. Bids were received during April and the plant layout contract let to Albert Kahn Associated Architects & Engineers Inc. Construction contract was awarded the latter part of May to Cunningham-Rudy Co. and ground broken June 23. Structural steel began arriving in August and the building was enclosed and the heat on early in December. By the end of that month, the first equipment was moved in and offices occupied Jan. 17.

Specializes in Welded Tubing—The company specializes in production of carbon steel and low-alloy high-tensile steel electric resistance welded tubing from 3/8 to 5-1/2-inch O.D. and in gages from 0.028 to 0.260-inch; stainless steel tubing 3/8 to 3-inch O.D. in gages 0.028 to 0.095-inch; upset forged tubing and bars, and fabricated tubular products. Nine continuous rolling, welding and sizing mills are operated, one exclusively for stainless steel. About 20 per cent of the product is for automotive applications, although efforts are being made to diversify end users to avoid dependence on a single industry. Thus, tubing is being supplied for furniture, refrigeration manufacturers, the oil industry, farm implements, dairy equipment, stoves, boilers and heat exchangers, vacuum cleaners and washing machines, children's vehicles and miscellaneous other accounts.

During the war when production went largely for a single type of tubing required by ordnance, Standard Tube shipped as much as 5 million feet per month. Naturally, in peacetime, output has scaled down somewhat, but production facilities are available for 20 per cent greater output than in the former plant. Availability of steel is at present a limiting factor.



In this operation at Standard Tube Co.'s new plant at Detroit a torque tube is being removed from upsetter after belling, while operator at the right has ready for belling a tapered tube from the heating furnace

Torque Tubes for Ford — Among unusual tube fabricating jobs handled is a torque tube for Ford cars, upset from 0.034 to 0.320-inch wall, flanged at one end, and tapered and flared at the other end. Tube is 3.4 inches outside diameter, and as shipped is 82-1/8 inches long, held to a runout of 0.030-inch. Forming operations are carried out hot on horizontal upsetters. Because of a change from torque-tube to a Hotchkiss type drive on the new Ford, this contract will run out shortly, but it is expected other tube fabricating work can be located to keep upsetters busy.

A large tonnage of tubing goes into automotive propeller shafts, some of which are made from low-alloy high-strength steel to exacting tolerances. They are arbor press straightened and dial-gaged for runout. Sizes vary from 1-1/2-inch O.D. by 16 gage to 4-inch O.D. by 11 gage. Shock absorber cylinder tubing is drawn over a mandrel to an I.D. tolerance of plus or minus 0.0005-inch, with burnished surface inside. Tubing for irrigation couplings is spun flared, beaded and expanded so that the finished tube has five different diameters.

Three Production Bays—Main production bays at the plant are 81 x 380 ft in size with area of better than 30,000 sq ft. Three are provided at present, with property available for half a dozen more. The entire single-story plant, together with offices, has floor area of about 146,000 sq ft.

Some of the mill drives are of the new variable-speed a.c. type, installed by the Dynamatic Corp. Connected power load is 3500 kva.

Officers of the company include George B. Storer, chairman; S. L. Willis, president and general manager; L. M. Hogan, vice president; and M. H. Cosgrove, secretary and treasurer.

Timken Merges Zanesville Operations in One Plant

Timken Roller Bearing Co., Canton, O., has leased 50,000 sq ft of manufacturing space at 2300 Linden Ave., Zanesville, O., in which to consolidate operations now scattered in three small Zanesville plants.

The new facility, to be occupied shortly after May 1, was leased for five years with the option of five consecutive one-year renewals from the owner, Shawnee Pottery Co. Although the move does not add an appreciable amount of total area in Zanesville, installation of all machinery in one building will enable Timken to arrange and combine operations to greater advantage.

Pittsburgh Coke Forms Farm Chemicals Affiliate

Pittsburgh Coke & Chemical Co., Pittsburgh, producer of coke, coal, steel, cement and related products, has formed a new affiliate, Pittsburgh Agricultural Chemicals Co., to manufacture and sell basic farm chemicals.

W. J. Haude, formerly vice president and sales manager of John Powell & Co. Inc., is company president.

Briefs . . . .

Paragraph mentions of developments of interest and significance within the metalworking industry

Laclede-Christy Clay Products Co., St. Louis, producer of refractories and related products, has changed its name to Laclede-Christy Co. There will be no change in management, address or products.

—o—

Farm Tools Inc., Mansfield, O., manufacturer of farm implements, has been acquired by Walter E. and Harold O. Schott for approximately $2 million. There will be no change in company personnel. A. Volderauers continues as president.

—o—

Mobilift Corp., Portland, Oreg., manufacturer of hoisting machinery, plans soon to open a sales and warehousing district headquarters in Dallas, Tex. H. J. Waggle is the district manager.

—o—

Morse Chain Co. Division of Borg-Warner Corp. and Formsprag Co. have formed the Morse-Formsprag sales department to market a new line of over-running clutches for industrial use. The sales organization will have headquarters at 7601 Central Ave., Detroit.

—o—

Peerless Pump Division, Los Angeles, Food Machinery Corp., maker of pumps and turbines, has opened a New York office at 37 Wall St., with R. C. Engemoen as district manager.

—o—

Chicago Metal Hose Corp., Chicago, has purchased Wheelock Mfg. Co., St. Johnsbury, Vt., and is operating it as the Wheelock Mfg. Division. Wheelock's line of coolant hose and flexible lamp arm tubing will be added to Chicago's line of related products.

—o—

Ross Operating Valve Co., manufacturer of valves, has moved to 120 E. Golden Gate, Detroit. Officers of the firm include John Sainsbury, president and general manager; Russell Cameron, vice president and secretary; and L. M. Blomgren, treasurer.

—o—

Bureau of Census reports that 53,112 truck-trailers were produced in 1947, compared with 76,234 in 1946. Although 1947 output was less than the all-time record of 1946, it was nevertheless approximately 30 per cent greater than the production for 1941, the industry's best prewar year.

—o—

Export-Import Bank has authorized a credit of up to $6 million to Nacional Financiera S. A., financial agency of the Mexican government, for the purchase of United States equipment, materials and services required for construction of an ammonium sulphate plant near Mexico City.

—o—

Link-Belt Co., Chicago, manufacturer of power transmission and materials handling equipment, has opened a sales office at 136 S. Fourth St., Louisville, Ky. Emmart LaCrosse Jr. has been appointed district sales manager in charge.

—o—

Du Betta Metals Corp., dealer in ferrous and nonferrous materials, has moved executive and sales offices to its warehouse at 33-44 Ninth St., Long Island City, N. Y.

—o—

Gray Iron Founders' Society, Cleveland, has formed a Quad Cities group at Davenport, Iowa, a local unit of the society and one of 40 being organized throughout the United States.

—o—

General Electric Co., Schenectady, N. Y., has awarded 58 of its employees with Charles A. Coffins awards, amounting to $250 per person, for work of outstanding merit in 1946 and 1947.

—o—

Office of Technical Services, Department of Commerce, has published two technical reports describing German improvements in locomotive building, freight car design and related railroad subjects.

—o—

Vacuum Cleaner Manufacturers' Association, Cleveland, reports sales of standard-size household vacuum cleaners in January totaled 304,272, an increase of 17.5 per cent over production in January, 1947.

—o—

Parker Appliance Co., Cleveland, manufacturer of tube fittings, valves and accessories, has appointed Standard Brass & Mfg. Co., Beaumont, Tex., as a distributor.

—o—

National Tube Co., Pittsburgh, subsidiary of U. S. Steel Corp., produced 253,750 tons of seamless pipe in 1947 at its McKeesport, Pa., works.

—o—

United States Steel Supply Co., Chicago, U. S. Steel Corp. subsidiary, has purchased the warehouse at 1940 Harrison St., San Francisco, from Columbia Steel Co., another U. S. Steel Corp. subsidiary. Facility will be in charge of Frank B. Stewart.

—o—

Borg-Warner Corp., Chicago, has leased a plant in Hammond, Ind., from Pullman-Standard Car Mfg. Co. which will be operated by Borg-Warner's Norge-Heat Division for production of oil and gas-fired water heating and air conditioning equipment, floor furnaces and conversion burners.

—o—

Allen-Bradley Co., Milwaukee, manufacturer of electric motor controls, has moved its Detroit office to 11100 E. Warren Ave. J. D. Petersen is district manager.

—o—

American Car & Foundry Co., New York, reports that its Wilmington, Del., plant won the company's safety trophy for 1947. The plant worked 11 months last year without a lost-time injury. Facility had an average of 274 employees throughout the year.

—o—

Champion Forge Co., Cleveland, has appointed District Steel & Equipment Co., Los Angeles, as its distributor for Champion forgings in California.

—o—

Phosphor Bronze Corp., Philadelphia, has purchased the assets of Phosphor Bronze Smelting Co., manufacturer of wire, strip, sheets, rods, ingots, rope, bushings and castings. Production will continue as before at 2200 Washington Ave., Philadelphia, with the same manufacturing personnel. Chairman of the board of the new corporation in F. S. Jerome, and president is A. C. Wheeler.

—o—

Small Lot Stamping Co., 1025 W. Blancke St., Linden, N. J., has been newly formed to specialize in the production of metal stampings in small lots. Firm uses temporary tools in many cases with resulting 80 to 90 per cent savings over use of permanent tooling.

—o—

Esso Standard Oil Co., New York, has placed contracts totaling $21 million for four new oil tankers with a capacity of 228,000 barrels each. Two will be built by Sun Shipbuilding & Dry Dock Co., Chester, Pa., and the others will be constructed by Newport News Shipbuilding & Dry Dock Co., Newport News, Va.

—o—

White Products Co., Middleville, Mich., manufacturer of electric appliances, has named Standard Distributing Co., San Antonio, Tex.; Igoe Bros., Newark, N. J.; and Bickford Bros., Buffalo and Rochester, N. Y., as distributors.

The Business Trend

UNDER stimulus of strong demand, the nation's industries are exerting themselves to make up the production losses which occurred last month. Better weather conditions spell gains by most manufacturers. In the week ended Feb. 28, industrial production, as measured by STEEL's index, advanced four points to 170 per cent (preliminary) of the 1936-1939 weekly average.

AUTOS—Spurting to within 1000 units of the postwar record set in the week ended last Dec. 20, car and truck production in the United States reached 114,215 in the week ended Feb. 28. Of this total 84,318 were passenger cars. Aggregate U. S. and Canadian turnout for the week was 119,425. Further gains are expected as builders use augmented steel stocks, but the projected higher rates probably will not be maintained much beyond this month.

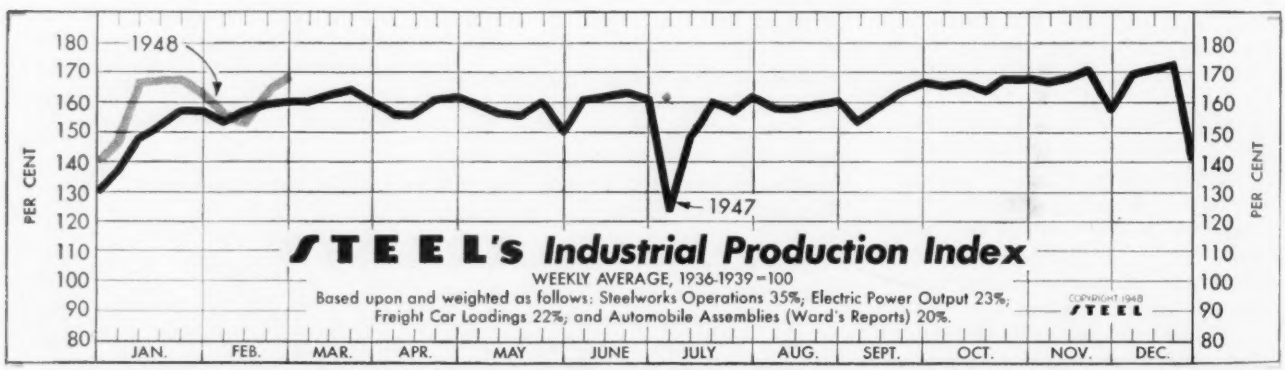
STEEL—Easier scrap supply conditions and less difficulty in moving raw materials and finished products should allow the national ingot rate to push upward again. In the week ended Feb. 28, however, the rate was unchanged at 93.5 per cent of capacity. Prospects are that care will continue to be exercised over consumption of steelmaking materials; iron ore stocks, for example, are in danger of dwindling to about 15 million tons at current rate of blast furnance operations before lake navigation can be resumed.

PRODUCTION—Although activity in durable goods industries showed a slight decline in January, due largely to adverse weather, industrial production as a whole showed little change in that month, according to the Federal Reserve Board. Its seasonally adjusted index has held steady for three months at 192 per cent of the 1935-1939 average.

CONSTRUCTION—January's dollar volume of construction contracts awarded in 37 eastern states was the highest recorded for that month since F. W. Dodge Corp. began its statistical series in 1925, the company announces. Awards totaled $615,206,000, a gain of 8 per cent over the like 1947 month. This total, however, was 2 per cent less than for December. Nonresidential contracts accounted for $240,544,000 of the total, a gain of 20 per cent over January, 1947.

EARNINGS—Weekly factory earnings declined from the December record of $52.74 to $52.27 in mid-January, according to preliminary estimates by the Bureau of Labor Statistics. A shortening of the workweek was responsible, the average hourly earnings rising from 127.9 cents in December to 128.9 cents in January.

PRICES—Lower food prices in the week ended Feb. 21 caused a further reduction in the Bureau of Labor Statistics' wholesale commodity index. At 159.2 per cent of the 1926 average, the index was off 0.3 per cent from the previous week. Iron and steel products, a subgroup in the index, showed a 1 per cent increase in the week, with increases of up to 12 per cent reported for some semifinished steel items.



Index (chart above): Week ended Feb. 28 (preliminary) 170 Previous Week 166 Month Ago 163 Year Ago 160

BAROMETERS of BUSINESS

INDUSTRY	Latest Period*	Prior Week	Month Ago	Year Ago
Steel Ingot Output (per cent of capacity)†	93.5	93.5	95.5	92.5
Electric Power Distributed (million kilowatt hours)	5,252	5,254	5,429	4,797
Bituminous Coal Production (daily av.—1000 tons)	2,139	1,872	2,033	2,172
Petroleum Production (daily av.—1000 bbl.)	5,387	5,342	5,318	4,771
Construction Volume (ENR—Unit $1,000,000)	$128.7	$88.6	$99.7	$91.7
Automobile and Truck Output (Ward's—number units)	119,425	110,536	101,044	105,574

* Dates on request. † 1948 weekly capacity is 1,802,476 net tons. 1947 weekly capacity was 1,749,928 net tons.

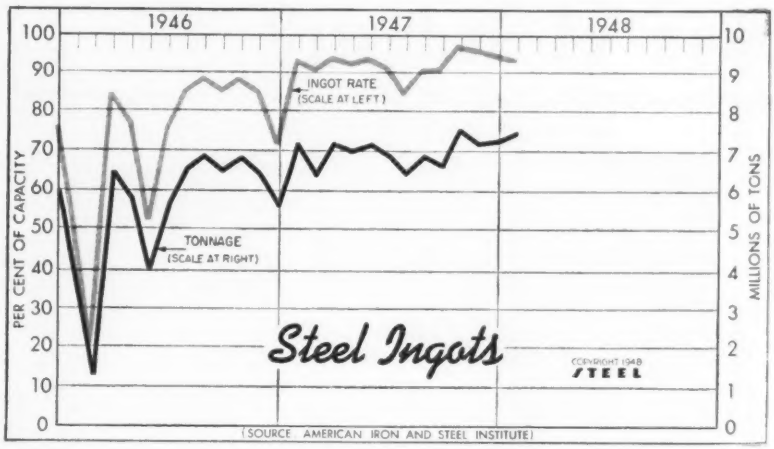
TRADE				
Freight Carloadings (unit—1000 cars)	840†	805	727	850
Business Failures (Dun & Bradstreet, number)	93	107	91	74
Money in Circulation (in millions of dollars)‡	$28,054	$28,053	$28,086	$28,262
Department Store Sales (change from like wk. a yr. ago)‡	+15%	−3%	+3%	+2%

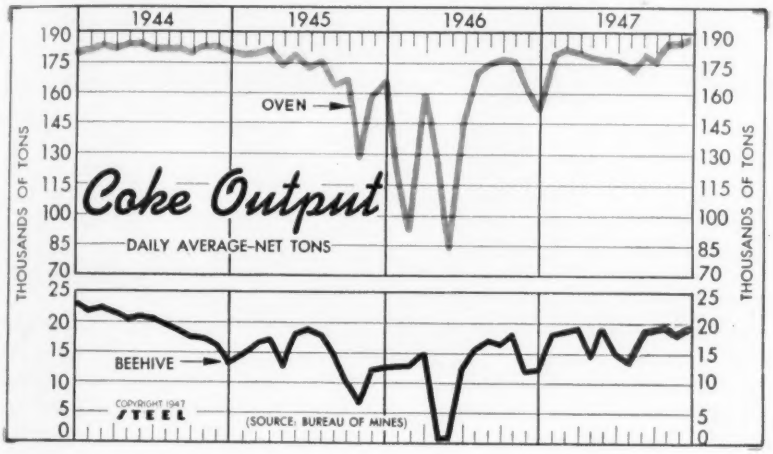
† Preliminary. ‡ Federal Reserve Board.

Steel Ingots

	Production (Net Tons—000)			Operating Rate (% of Capacity)		
	1948	1947	1946	1948	1947	1946
Jan.	†7,463	7,213	3,873	†93.5	93.0	49.6
Feb.	....	6,422	1,393	...	91.7	19.8
Mar.	....	7,307	6,509	...	94.3	83.3
Apr.	....	7,043	5,861	...	93.8	77.5
May	....	7,329	4,073	...	94.5	52.2
June	....	6,969	5,626	...	92.8	74.4
July	....	6,570	6,619	...	84.9	84.9
Aug.	....	6,982	6,924	...	90.1	88.7
Sept.	....	6,789	6,556	...	90.6	86.9
Oct.	....	7,560	6,952	...	97.5	89.0
Nov.	....	7,233	6,458	...	96.3	85.4
Dec.	....	7,366	5,760	...	95.2	73.9
Total		84,784	66,603	Ave.	92.9	72.5

† Preliminary.





Coke Output

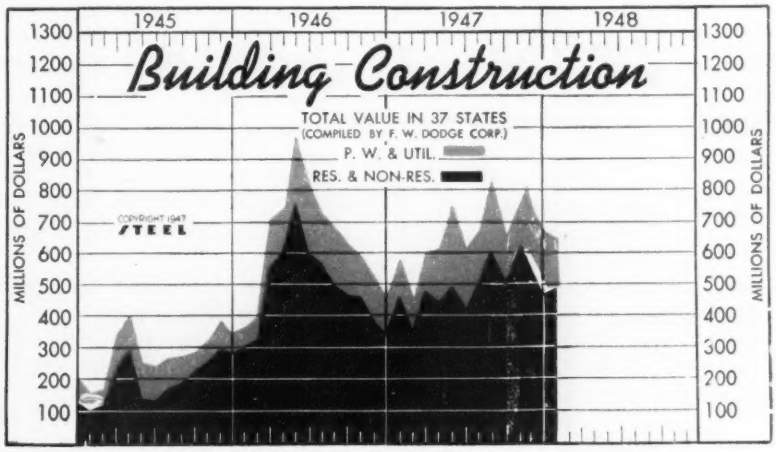
Bureau of Mines
(Daily Average—Net Tons)

	Oven		Beehive	
	1947	1946	1947	1946
Jan.	181,245	122,570	18,124	13,093
Feb.	183,189	93,985	18,372	13,140
Mar.	182,529	161,290	18,725	14,962
Apr.	179,428	128,394	14,315	713
May	178,398	83,019	18,922	869
June	177,416	148,100	15,054	12,600
July	173,312	172,700	13,582	15,600
Aug.	181,697	177,300	18,346	17,400
Sept.	179,872	179,200	19,397	16,700
Oct.	187,009	178,900	19,786	18,500
Nov.	188,342	165,100	18,316	12,400
Dec.	189,886	154,700	19,454	12,800
Ave.	181,860	147,105	17,699	14,898

Construction Valuation in 37 States

(Unit—$1,000,000)

	Total	Public Works Utilities		Residential and Non-residential	
	1948	1948	1947	1948	1947
Jan.	615.2	136.6	113.9	478.6	457.7
Feb.	....	....	90.5	....	351.6
Mar.	....	....	122.0	....	474.8
Apr.	....	....	161.4	....	441.0
May	....	....	252.9	....	490.0
June	....	....	185.7	....	419.4
July	....	....	165.9	....	494.4
Aug.	....	....	223.5	....	599.7
Sept.	....	....	141.5	....	508.4
Oct.	....	....	165.9	....	627.4
Nov.	....	....	181.5	....	533.6
Dec.	....	....	154.1	....	471.3
Totals	....	....	1,958.8	....	5,869.3



FINANCE

	Latest Period*	Prior Week	Month Ago	Year Ago
Bank Clearings (Dun & Bradstreet—millions)	$11,766	$12,768	$13,929	$11,370
Federal Gross Debt (billions)	$254.7	$254.8	$256.6	$261.5
Bond Volume, NYSE (millions)	$15.6	$16.5	$22.8	$18.3
Stocks Sales, NYSE (thousands)	3,092	3,770	4,575	5,377
Loans and Investments (billions)†	$64.3	$64.4	$65.5	$63.4
United States Gov't. Obligations Held (millions)†	$36,634	$36,791	$37,886	$39,802

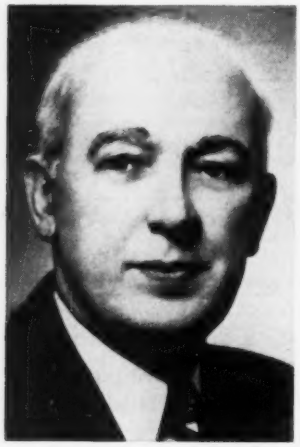
† Member banks, Federal Reserve System.

PRICES

STEEL's composite finished steel price average	$81.14	$31.14	$78.59	$69.73
All Commodities†	159.2	159.7	164.4	144.3
Industrial Raw Materials†	173.6	173.4	184.8	156.2
Manufactured Products†	153.5	154.5	156.5	140.0

† Bureau of Labor Statistics Index, 1926=100.

Men of Industry



FRANK J. WHELAN

J. E. ASHMAN

WILLIAM B. RENOIS

Worthington Pump & Machinery Corp., Harrison, N. J., has elected **Frank J. Whelan** a vice president of the corporation. He will be in charge of industrial and oil field merchandising activities. Mr. Whelan has been with the corporation for the past 14 years in various capacities, and following a leave of absence of one year with the War Production Board in Washington, has been, since 1943, assistant to the vice president, as well as manager of the corporation's Reciprocating Pump Division, in which position he is succeeded by **Alvin F. Welsh,** engineer in that division.

—o—

L. R. Emmert, who since 1938 has been associated with the Washington office of Westinghouse Electric Corp., Pittsburgh, has been named the company's manager of rural electrification. He succeeds **N. H. Callard,** who has taken a position with the Hilo Electric Light Co., Hilo, Hawaii.

—o—

Leo A. Behrendt, formerly director of the Crucible & Refractories Division of the Joseph Dixon Crucible Co., Jersey City, N. J., has been elected vice president of marketing for the company's three industrial divisions—Crucible & Refractories, Graphite & Lubricants, and Graphite Paints.

—o—

Henry H. Ziesing, vice president, sales, the Midvale Co., Philadelphia, has been elected a director of the company to fill the vacancy caused by death in December of **Dr. Harry L. Frevert.**

—o—

Robert Hague has been elected secretary-treasurer of the Wilmington Casting Co., Wilmington, O., to succeed the late **Emery R. Bales.**

—o—

Rockwell Mfg. Co., Pittsburgh, announces election of **J. E. Ashman** as vice president and controller. Because of expanding operations of the company, the office of secretary-treasurer has been segregated. **E. W. Meyers,** who held the combined office, has been named secretary, and **M. J. Carl** elected treasurer. **Paul A. Wick** and **I. C. Rowe** have been elected assistant secretaries.

—o—

Foster C. Koehn has been appointed plant manager of the Falk Corp., Milwaukee. He has been associated with the company 25 years.

—o—

H. E. Heywood, long associated with the oil industry and the National Supply Co., Pittsburgh, has been named manager of the company's general sales office, Toledo, O. National Supply Co. Ltd. has promoted **Alvin B. Geddes** from sales representative in the Calgary, Alta., area to district manager in Canada. His headquarters will be in Calgary.

—o—

Bailey Meter Co., Cleveland, has expanded its field engineering staff by adding the following, all recent engineering graduates: **H. E. Bitler,** to Buffalo office; **M. J. Bonnette** and **R. W. Hooper,** to Houston, Tex.; **J. W. Cunningham,** to Atlanta; **H. G. Hilston,** to Cleveland district office; **J. O. Meals,** to St. Louis; and **L. W. Meier,** to Los Angeles. **J. R. Brennan, J. A. Hays** and **R. P. Marche** remain at the Cleveland main office, where they will be attached to the engineering research, and sales departments, respectively. The company has transferred **R. B. Ritschard** from Cincinnati to its Cleveland district office.

—o—

William B. Renois has been appointed general manager of sales at Gerrard Steel Strapping Co., subsidiary of U. S. Steel Corp. Formerly manager for 19 years of the company's southern division, with headquarters at New Orleans, Mr. Renois joined the firm in 1926 as a field service man.

—o—

Edward O. Burgham, assistant general superintendent of Weirton Steel Co., Weirton, W. Va., a division of National Steel Corp., Pittsburgh, has been promoted to general superintendent at Weirton. **Ray O. Bowman** has been appointed supervisor of chemistry and research in Weirton's quality control division, **D. H. Dellinger** to head service and inspection, and **Thomas F. Cleary,** as chief inspector in quality control.

—o—

Julius A. Smith has been promoted from sales representative to sales supervisor of the Southern States Iron Roofing Co., with headquarters in Savannah, Ga.

—o—

William R. Odell Jr., treasurer, International Harvester Co., Chicago, has been elected to the additional post of vice president. He became assistant treasurer in 1931 and treasurer in 1946.

—o—

Leonard P. Rice, formerly metallurgist with Bendix Products Division of Bendix Aviation Corp., has been named to the metallurgical re-

Faster Cutting, Longer Tool-Life, Reported for the New Sun Cutting Fluids Containing No Animal or Vegetable Fatty Oils

Since Sun recently announced the new grades of Sunicut with Petrofac, favorable performance reports have been coming in on practically every kind of metal-cutting job.

Higher cutting speeds, longer tool-life, increased production, better finish, performance superior to that of any cutting oils previously used . . . these are the "Job Proved" results that are constantly being reported.

"10% increase in tool-life on our automatics" . . . "chaser-life increased 50% on pipe-threading machines" . . . "finer finishes" . . . "best cutting oil I have ever used" . . . say typical reports from our customers.

No animal or vegetable fatty oils go into the new Sunicut grades. The Petrofac used in compounding is entirely derived from petroleum. The new Sunicut Cutting Oils with Petrofac possess superior metal-wetting and anti-welding properties, as well as unusual extreme-pressure characteristics.

Sunicut with Petrofac will not turn rancid. It is available in plentiful supplies and at reasonable, stable prices. Call in your Sun Cutting Oil Engineer for full information, or write Department S-3

SUN OIL COMPANY
PHILADELPHIA 3, PA.
"Makers of the well-known Sunoco Emulsifying Cutting Oil"
In Canada: Sun Oil Company, Ltd.—Toronto and Montreal

SUN INDUSTRIAL PRODUCTS

SUNOCO

*Petrofac is a trade-mark of Sun Oil Company

search staff of Battelle Memorial Institute, Columbus, O.

—o—

Lester Samstag, who has been metallurgical production engineer with General Aluminum Mfg. Co., Cleveland, has been appointed production metallurgist of the company, and **Robert E. Keith,** who has been production metallurgist in the aluminum foundry of Thompson Products Inc., Cleveland, has been named metallurgical sales engineer at General Aluminum.

—o—

Dr. Jesse E. Hobson has resigned as director of Armour Research Foundation of Illinois Institute of Technology, Chicago, to become executive director of the Stanford Research Institute, Stanford University, Calif., Mar. 15.

—o—

Robert G. Tabors, until recently sales manager for the William H. Harman Corp., Wilmington, Del., has been appointed sales manager of the Hydraulic Press & Power Tools Section of Baldwin Locomotive Works, Eddystone, Pa.

—o—

Ottis O. Albritton, who since 1918 has been associated with the Illinois Central Railroad, has been appointed its director of purchases and stores, succeeding the late **Albert C. Mann.**

—o—

Marshall E. Munroe has been appointed tractor purchasing agent of Harry Ferguson Inc., Detroit. He will be in charge of procurement of all components for production of the new Ferguson tractor at the company's new tractor plant under construction in Detroit. He joined the company in 1939 as factory representative at Cleveland.

—o—

Clarence Coleman has been promoted by Kelite Products Inc., Los Angeles, to regional managership of its Arizona-Nevada district, with headquarters in Phoenix, Ariz.

—o—

Bert E. Brashares has been appointed sales engineer in the steel castings department of Continental Foundry & Machine Co., East Chicago, Ind. He will have headquarters in Pittsburgh and will service the Middle Atlantic states. Mr. Brashares formerly was associated with Jones & Laughlin Steel Corp.'s Otis Casting Division in Cleveland.

—o—

Fay Brainard has assumed duties of the newly created position of special assistant to the general manager of Hyster Co., Portland, Oreg. Mr. Brainard, who has been plant engineer of the company's Portland plant since joining Hyster in 1942, will expedite projects in methods, inventory control and similar fields. **Svante Eikrem,** who joined Hyster in 1943, succeeds Mr. Brainard as plant engineer.

—o—

Howard C. Wolf has been named to succeed **Richard F. White** as assistant to the president of Mullins Mfg. Corp., Salem, O. Mr. White is retiring after 26 years with the company, serving as works manager and a vice president in Salem, O., and later assistant to the president. He was elected to the board of directors in 1929, a position he will continue to hold, as well as serving as consultant to the corporation from his office in Washington. Mr. Wolf has been doing special product and market survey work for the company during the past two years.

—o—

Wilmer H. Cordes, manager, market development division of American Steel & Wire Co., Cleveland, a U. S. Steel Corp. subsidiary, has been given the duties also of manager of the subsidiary's advertising division.

—o—

W. E. Byrne, Chicago territory sales manager for Simonds Abrasive Co., Philadelphia, will serve also as Detroit district sales manager. He will continue to be located at Simonds branch warehouse, 127 S. Green St., Chicago.

—o—

John Stewart, president of the Donner Corp., Philadelphia, has been elected to fill a vacancy on the board of directors of Pittsburgh Steel Co., Pittsburgh.

—o—

Jonathan W. Freeman, director and vice president, Pittsburgh Tube Co., Pittsburgh, since its organization in 1924, has been elected president to succeed the late **Robert W. Hannan.**

—o—

John J. Harding has been appointed vice president and general manager of Federal Enameling & Stamping Co., McKees Rocks, Pa. He formerly had been president of Massillon Aluminum Co., Massillon, O.

—o—

H. M. Blinn, formerly district sales manager at Cincinnati for Continental Can Co., New York, has become the company's sales manager for the San Francisco district.

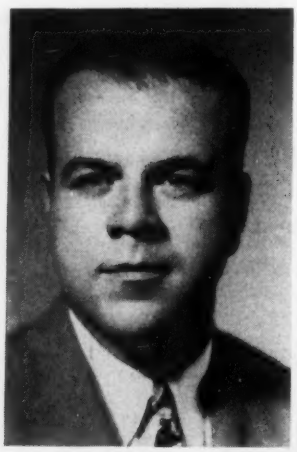
—o—

Leon Norfleet has been named industry manager of the Marine Division of Reynolds Metals Co., Louisville. Except for two years in the Navy, Mr. Norfleet has been with the organization since 1941, when he went to the Reynolds Alloys Co. at Listerhill, Ala., as assistant purchasing agent. He recently had been assistant purchasing agent of the company, at Louisville.

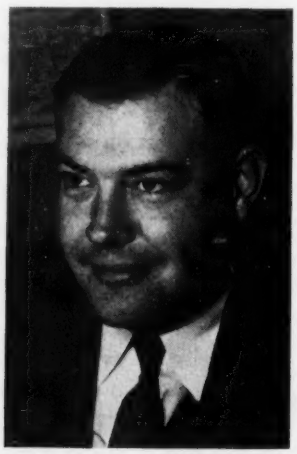
—o—

Clarence J. Smith, formerly gen-

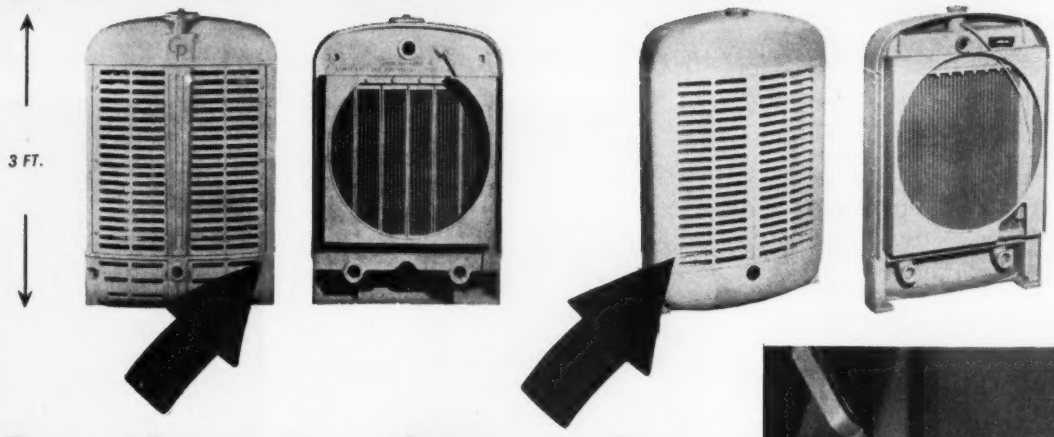
MARSHALL E. MUNROE



HOWARD C. WOLF



LEON NORFLEET



Casting-to-Stamping saves as much as 30% for Young Radiator Co.

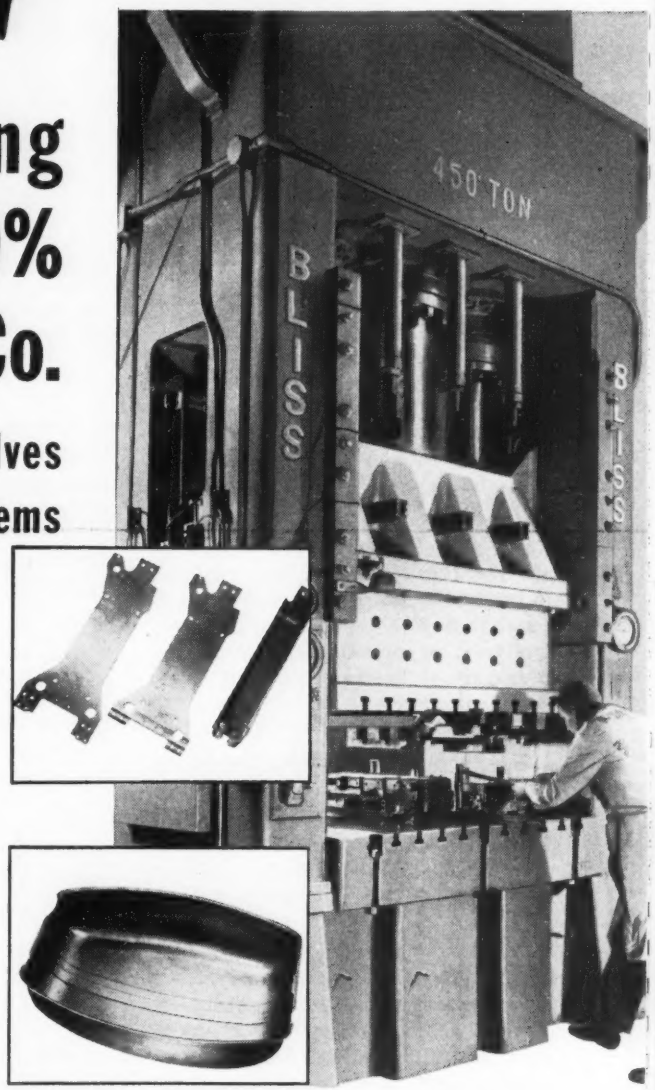
450-Ton Bliss Hydraulic Press solves delivery, weight and durability problems

To achieve lighter, stronger and more cleanly designed radiators for automotive and industrial applications, the Young Radiator Company, of Racine, Wis., manufacturers of quality heat transfer equipment, recently converted the outside casings, tanks and side members from castings to formed steel parts. As it has consistently for 20 years, it chose Bliss to specify the press for the job. The resulting savings have been as much as 30%.

Today this 450-ton single-action hydraulic press is the pride of the plant. The weight of the radiators has been more than halved, and the drawn tanks provide as much cooling and are more durable than their cast counterparts. Besides the drawing of tank shells and housings, the press is used for forming operations on steel, aluminum and other metals.

Bliss, as it has for 90 years, did more than build a press. It provided the vital engineering knowledge for its maximum production. That's why 70% of Young's press equipment is Bliss-built...why President F. M. Young, who says, "We have long been advocates of Bliss presses and service," attributes much of the credit for his company's press production to Bliss engineering counsel.

This service and engineering counsel are at your disposal. You'll find, as Young Radiator Company has for more than two decades, that "Bliss" on your press is more than a name—it's a guarantee!



Feature of this Bliss Hydraulic Press which delights Young is its extreme flexibility: use of the outside cylinders for jobs up to 175 tons pressure; availability of full 450-ton pressure for heavier work, ability to accommodate off-center loads; quick advance and quick return; inching for die-setting and safety afforded by central push-button operation.

Above photo shows second and third forming operations of 18-gauge steel on radiator side members (inset, top). A third die will handle the initial piercing operation. A Bliss hydraulic cushion ejects the stamping...this cushion was previously used as a blankholder to draw the shell, 7⅝" deep x 18" x 27" (inset, bottom), which is subsequently split in the center to form the top and bottom parts of the radiator housings shown at heading of page.

E. W. BLISS COMPANY, DETROIT 2, MICHIGAN

Mechanical and Hydraulic Presses, Rolling Mills, Container Machinery

WORKS AT: Toledo, Cleveland, Salem, Ohio; Hastings, Mich.; Englewood, N. J.; Derby, England; St. Ouen sur Seine, France • SALES OFFICES AT: Detroit, Hastings, Mich.; New York, Rochester, N. Y.; Cleveland, Dayton, Toledo, Salem, Ohio; Philadelphia, Pittsburgh, Pa.; Chicago, Ill.; New Haven, Conn.; Windsor, Ont.

BLISS BUILDS MORE TYPES AND SIZES OF PRESSES THAN ANY OTHER COMPANY

STAY AHEAD WITH *Bliss*

eral manager of Process Equipment Division of W. F. & John Barnes Co., has been appointed chief engineer of Hydro-Line Mfg. Co., Rockford, Ill. Hydro-Line also has appointed **Frank G. Bastable** as sales representative in its Midwest territory. He is vice president of Rockford Automotive Industries, which he organized in 1946.

—o—

Leslie T. Carr, who has been sales promotion manager for Marchant Calculating Machine Co., Oakland, Calif., has been named national sales manager for the company.

—o—

Frank R. DeBartolo, who has been chief engineer of the Lombard Corp., Youngstown, has been appointed assistant to the company's vice president and assumes charge of all promotional and development activities. The company's new chief engineer is **Alfred W. Schultz,** formerly of Warren City Mfg. Co., Warren, O., and new assistant chief engineer is **Edgar P. Hulse,** who for the past several years has been associated with C. H. Hunt Inc., Pittsburgh.

—o—

John McKee, who has been engaged in sales and new product development for Ferro Enamel Corp., Cleveland, has been appointed assistant to the president of Tuttle & Kift Inc., Chicago, subsidiary of Ferro Enamel.

—o—

Dr. John T. Rettaliata, director of the department of mechanical engineering at Illinois Institute of Technology, Chicago, will become the institute's dean of engineering Sept. 1, to succeed **James C. Peebles,** retired.

—o—

Additional members appointed to the finance committee of the Committee for Economic Development, New York, include **Thomas Drever,** president, American Steel Foundries, Chicago; **Larry E. Gubb,** board chairman, Philco Corp., Philadelphia; and **George M. Humphrey,** president, the M. A. Hanna Co., Cleveland.

—o—

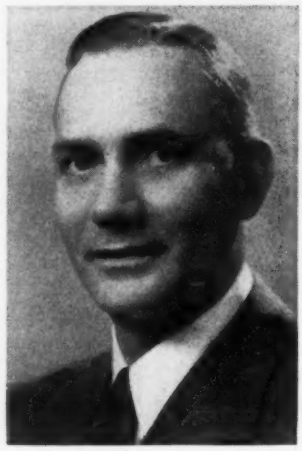
Lewis B. Williams, chairman, National City Bank of Cleveland, has been elected a director of the Warner & Swasey Co., Cleveland, to succeed the late **Robert F. Bingham.**

—o—

John R. Hickman has been appointed director of field sales personnel, the B. F. Goodrich Co., Akron, succeeding **Dale Kramer,** on temporary leave because of health. Associated with Goodrich since 1944, Mr. Hickman has been manager of employees' services since 1946.

—o—

B. L. Rawlins has been appointed assistant general solicitor, U. S. Steel Corp. He joined the corporation in 1938 as a general attorney, serving in this capacity until becoming general attorney of its subsidiary, Carnegie-Illinois Steel Corp., in 1946. Succeeding him as general attorney of Carnegie-Illinois is **Leroy L. Lewis,** who since 1943 has been a general attorney with U. S. Steel Corp.



GILBERT SOLER
General superintendent, Atlas Steels Ltd., Welland, Ont., who has assumed chairmanship of the Iron & Steel Division, American Institute of Mining & Metallurgical Engineers. See STEEL, Feb. 23, p. 53

—o—

John J. Laughlin has returned to TelAutograph Corp., New York, in the capacity of branch manager of its Boston office. For the past five years he represented Holtzer-Cabot Division of First Industrial Corp. in Boston and Detroit. Prior to that he spent 17 years with TelAutograph in various service and sales posts.

—o—

John S. Godley has been appointed sales representative of the Nelson Sales Corp., Lorain, O. Formerly in the company's Detroit office, he will serve the Washington area. **R. E. McGinnis** has been appointed to succeed Mr. Godley at Detroit.

—o—

Preston H. Haskell Jr., former vice president in charge of coal mine operations and coal sales for Alabama By-Products Corp., Birmingham, has resigned to become president of Southern Minerals Co., Birmingham.

—o—

C. E. Howes has been named manager of sales, steel equipment products, Berger Mfg. Division, Republic Steel Corp., Cleveland.

—o—

Hugh R. Bishop has been named sales representative in the Chicago territory for the Heavy Chemicals Division of Pennsylvania Salt Mfg. Co., New York. He succeeds **C. Harvey Anderson,** recently transferred from Chicago to the Wisconsin and Minnesota territory.

A. A. SMITH JR.
Of American Smelting & Refining Co., Barber, N. J., who is new chairman of Institute of Metals Division, American Institute of Mining & Metallurgical Engineers. See STEEL, Feb. 23, p. 53

—o—

Kenneth L. Selby has been appointed chief engineer, Railway Division, National Malleable & Steel Castings Co., Cleveland, succeeding the late **H. W. Gilbert.**

—o—

Hal E. Colliver has been named Ohio district manager for National Electric Products Corp., Pittsburgh. He has been in charge of the company's Cincinnati sales office. **R. O. Burke,** raceway sales specialist, has been transferred from the Cincinnati territory to the company's Cleveland district office.

—o—

F. F. Bain has been appointed to the newly created position of stainless steel service metallurgist, Atlas Steels Ltd., Welland, Ont. In 1947 he joined Baltimore Castings Corp., Baltimore, as chief metallurgist, and at the same time was retained by Atlas Steels Ltd. as stainless steel consultant. He had previously been with Rustless Iron & Steel Corp. at Baltimore.

—o—

F. W. Sheppard has been elected general sales manager, and **C. A. Brashares,** sales manager of the Birmingham district, for Harbison-Walker Refractories Co., Pittsburgh. Formerly district sales manager at Birmingham, Mr. Sheppard will now have his headquarters at Pittsburgh.

—o—

Peter Altman has been appointed vice president, Continental Motors Inc., Detroit, in charge of its newly organized Multi-Tool Division. He has been on Continental's staff for five years as a consultant and as chair-

ROBERT C. MYERS

Who has been appointed manager, Market Development Division, Carnegie-Illinois Steel Corp. Noted in STEEL, Mar. 1 issue, p. 84

LEE STRATTON

Has been appointed merchandise director of Parts Division, Reynolds Metals Co., Louisville. Noted in STEEL, Mar. 1 issue, p. 80

H. S. ROBERTSON

Has been elected vice president, Harbison-Walker Refractories Co., Pittsburgh. Noted in STEEL, Feb. 23 issue, p. 81

man of its engineering council. He will continue in the latter duties and will make his headquarters in the company's newly opened offices at 620 Ford Bldg., Detroit.

—o—

Marshall E. Beaman, director of industrial relations, North American Aviation Inc., Dallas, Tex., has joined Ford Motor Co., Dearborn, Mich., as assistant manager of industrial relations. **Robert S. Dunham,** formerly director of salaried personnel for Ford Co. since 1945, has been promoted to a similar position. Both men will serve directly under **Mel B. Lindquist,** manager of industrial relations.

—o—

Standard Transformer Co., Warren, O., announces appointment of **F. W. Knoeppel** as its sales representative in Florida.

—o—

T. H. Sanford has been appointed management's representative in charge of industrial relations at the Bethlehem Pacific Coast Steel Corp., Seattle plant, succeeding **Frank D. Atkins,** who has been transferred to the company's Los Angeles plant.

—o—

William P. Kliment, engineer of standards, engineering and research division, Crane Co., Chicago, has been appointed by the Manufacturers Standardization Society of the Valve and Fittings Industry to the Standards Council of the American Standards Association, New York.

OBITUARIES . . .

S. A. Cochran, 71, president, Frank Samuel & Co. Inc., Philadelphia, died Feb. 28. Mr. Cochran joined the Frank Samuel company in 1902, and upon its incorporation in 1932 became a director and vice president. He continued in that capacity until 1939, when he was elected president. Prior to his association with that company, Mr. Cochran served as a chemist for the Pencoyd Iron Works, Pencoyd, Pa., for several years. He was a member of the American Iron & Steel Institute.

—o—

George E. Clark, foundry engineer, Cummins Engine Co. Inc., Columbus, Ind., died Feb. 19. He had been connected with the company for the past seven years as metallurgist on all phases of casting problems.

—o—

Harold E. Long, 60, plant manager, Nash Motors Division of Nash-Kelvinator Corp., Kenosha, Wis., and associated with the company since 1918, was killed in a motor accident near that city Feb. 28.

—o—

Luciano Selmi, 68, metallurgical consultant to the sales department, Great Lakes Steel Corp., Detroit, died Feb. 29. He joined Otis Steel Co., Cleveland, in 1910, and Corrigan, McKinney Steel Co., Cleveland, in 1915, remaining there until he joined Great Lakes Steel Corp. in 1928. He had been chief metallurgist for many years before becoming consultant in 1943.

—o—

Carlos H. Allen, 56, dean of bearing application engineers specializing in automotive design, and for 29 years in the Detroit office of New Departure Division, General Motors Corp., Detroit, died recently.

—o—

Leo J. Messinger, 51, manager, George Birkenstein & Co., Chicago, died Feb. 26 in that city.

—o—

Harry E. Shoff, 71, vice president, Columbia Pipe & Supply Co., Chicago, died Feb. 27.

—o—

W. Alfred Dielhenn, 72, president, Massillon Refractories Co., Massillon, died recently.

—o—

Martin Newcomer, 64, assistant director of research, the Winchester Repeating Arms Division, Olin Industries Inc., died unexpectedly Feb. 24 at his home at Ives Corner, Cheshire, Conn.

—o—

Arthur H. Neff, 53, cost accountant with Jones & Laughlin Steel Corp. at Cleveland, died Mar. 1.

—o—

Paul E. Heller, 79, president of Heller Bros. Co., manufacturer of files, Newark, N. J., died Feb. 26 at his home there.

—o—

Ferdinand Zogbaum, 61, of New Rochelle, N. Y., superintendent of electrical construction bureau of the Consolidated Edison Co. of New York Inc., died Feb. 26.

—o—

H. L. Rogers, 71, chairman, Belden Mfg. Co., Chicago, died Feb. 27 at Pompano, Fla.

—o—

Theodore Jasson, 54, comptroller, Eastern Air Devices, New York, died Feb. 28.

—o—

Edward Nash Hurley Jr., 55, chairman, Electric Household Utilities Corp., Chicago, died Feb. 25.

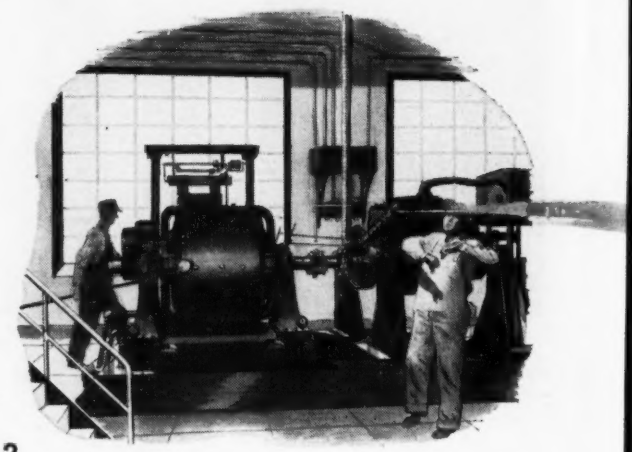
—o—

Edward J. Fitzpatrick, 75, former owner of an iron foundry in Yonkers, N. Y., died there Feb. 24.

Have a case of shock to cure?

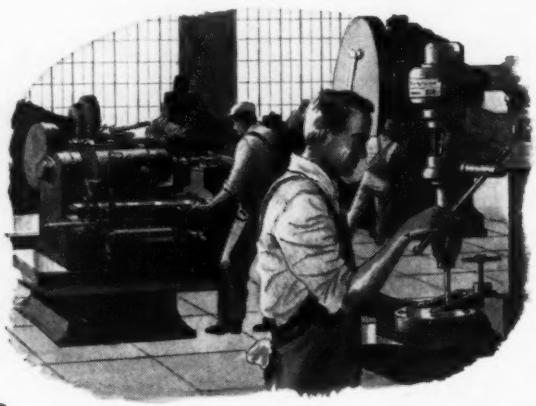
1

"Rev 'er up" is the cry as truck engines roar up to 3000 RPM on giant test stands. It's done to make sure they'll stand the gaff. But occasionally an engine gets ornery — backfires; stops suddenly. Shock! Plenty of it. But what's a backfire to you? Well, what Morse Chain Company did about it may be a boon to *your* business, too . . .



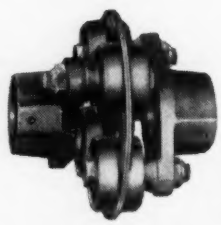
2

Shake, shock and shimmy were the problems Morse Power-Transmission Engineers found on test blocks: a natural for Morse Morflex Coupling. This versatile Morse product absorbs torsional shock, teeth-rattling vibration, and shaft misalignment. Morflex between engines and test blocks reduced bearing wear, protected equipment. This helps you to . . .

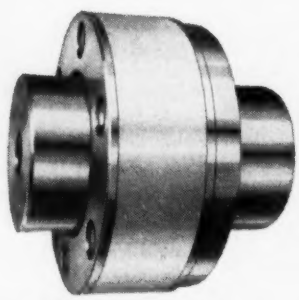


3

Save yourself a headache. Shafts, wheels and machines in your business can be safeguarded. When shaft vibration causes bearing failure it might be prevented by Morflex. *Wherever there is industry* they are adaptable to universal drive connections; allow no power loss; are sealed against dirt and moisture; free of metal-to-metal contact!



Morflex Coupling

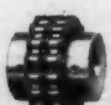


Morflex Radial Coupling

4

Proof of outstanding performance? Call or write Dept. 127, Morse Chain Company, Detroit, Michigan. Hear case histories from experienced Morse Engineers. You'll soon see *how* and *why* Morse Couplings, Roller and Silent Chains, Sprockets and Clutches have been profitably applied by America's foremost manufacturers.

Roller Chain Drives



Roller Chain Couplings

Silent Chain Drives

MORSE

MECHANICAL POWER TRANSMISSION PRODUCTS

A PRODUCT OF B-W BORG-WARNER

Free Wheeling Clutches

MORSE CHAIN COMPANY • DETROIT 8, MICHIGAN

Engineering News . . . AT A GLANCE

MAKES REAMERS WITH ROLLER PROCESS—By means of a patented rolling process that involves no application of heat in any form, U. S. Tool & Mfg. Co., Dearborn, Mich., can produce either standard or special high speed reamers without danger of deteriorating temper, hardness or durability of the blades. Procedure employed by the company, which consists of securing cutter blades of high speed steel in recesses of a low carbon steel tool body, also is used to restore worn and undersize reamers to their original precision limits.

SIMPLE—IN LOOKS ONLY—Making a fluorescent lamp is a highly complex job, involving much know-how and hundreds of tests along the way to insure high quality and top performance, it was pointed out recently by General Electric Co., Nela Park, Cleveland. To obtain pure tungsten powder, for example, it requires putting wolframite ore through eight different major reduction processes, and an additional 30 or so treatments to get it ready for drawing into wire.

PIN-POINTED PRESSURE—To test adhesive qualities of paint for high-speed aircraft, the Navy currently is utilizing an "ultra-centrifuge" which spins a small steel ball at a speed of approximately 1800 miles per hour. In the test, a dot of paint is placed on the steel ball. This is suspended in vacuum in the novel centrifuge, and subjected to a rotating magnetic field. At top speed the ball travels in the Navy and University of Cincinnati-developed device at 2,400,000 revolutions per minute. It spins so swiftly and is so friction-free that if power is cut off it will spin on for a week before stopping. Dot of paint on the ball is subjected to a force of more than 2,400,000 times the pull of gravity.

EMERGENCY GAS—To eliminate future production shutdowns due to gas shortages, Fedders-Quigan Corp., Buffalo, now is in process of installing a propane gas setup capable of supplying plant needs for stretches of 2 weeks to a month. Installation of one tank holding capacity of one tank car is already completed, and preparations are being made for erection of a second. To supply plant equipment with same amount of heat provided by natural or city gas, company also is providing facilities for mixing the propane with proper amount of air.

PLATES METAL TO WOOD—Out on the West Coast, Bone Engineering Co., is nickel plating wooden airplane propellers to a depth of 0.010-inch to eliminate warpage due to moisture absorption, and to provide abrasion resistance. The Glendale, Calif., concern is thus able to take advantage of light weight factor provided by the wood.

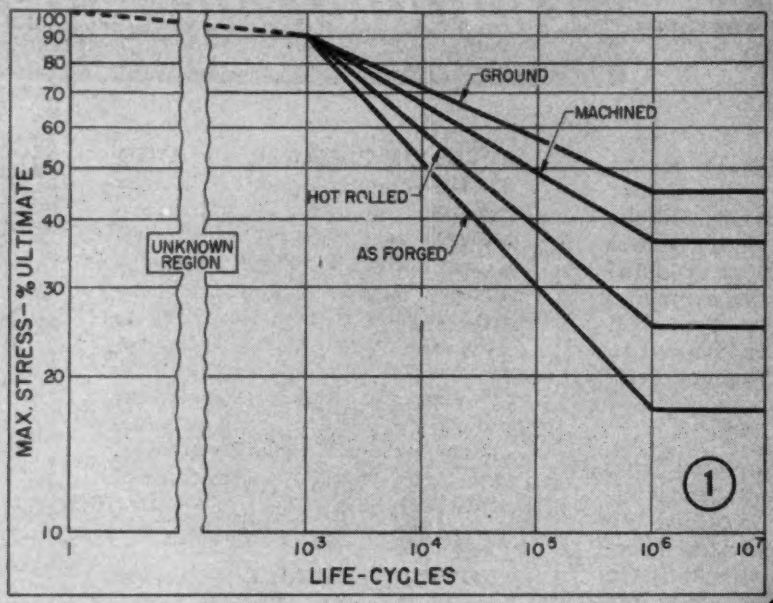
"INOCULANT" FOR MACHINABILITY—Closer structure control and improved machinability are incorporated in gray iron through inoculation of an alloy developed recently by International Nickel Co. Inc., New York. Composed essentially of 60 per cent nickel, 30 per cent silicon and 10 per cent iron, the alloy penetrates and diffuses rapidly through the melt, exerting a strong homogenizing influence on the product. Besides eliminating chilled edges, alloy addition frequently eliminates need of annealing to permit efficient machining.

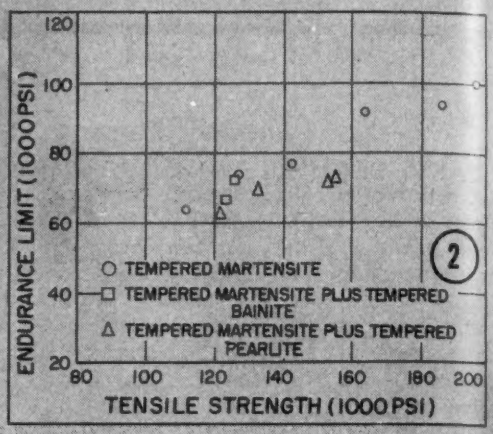
FORGOTTEN FACTOR IN AUTO STEEL—Endurance limit is a very important property of automotive steels because nearly all service requirements subject steels to fatigue stresses. Service performance of the steel is predicated on its ability to withstand fatigue loads. Usual approximation for endurance limit is 50 per cent of the tensile strength, but too often, it is pointed out, it is forgotten that this is the value obtained with highly polished surfaces free of notches. (p. 82)

"NIPPING" FATIGUE — Logical place to begin to eliminate maleffects of industrial fatigue is at the outset when workers are first hired. If management can eliminate such mistakes as placing "square pegs in round holes," fatigue can be virtually "nipped in the bud" and productivity realized almost at once. Consideration of an individual's mental and physical characteristics in job placement goes a long way toward overcoming fatigue. (p 88)

TOOL ENGINEERS' TASK — The tool engineer bridges the gap between the design and building of a machine tool and its setup for efficient operation in a production line. It's up to him to "brief" management on design and selection of tools, dies and gages plus various attachments special machines and metalworking techniques that reflect improved performance and product in addition to reduced costs. He is the man who instructs labor to appreciate the mechanical aids and to use them effectively. (p. 95)

USES COOKING COAL—In making coke, the Geneva Steel plant out on the West Coast makes use of a coal described as a "cooking coal." It contains about 9 per cent oxygen. However, a good metallurgical coke is made from it through addition of coal tar pitch and using a substantially higher than customary oven practice. Total coke yield is about 65 per cent from the coal as charged. Better coking coal is now being mined, although during the war, the coking coal was so poor that it required 2346 pounds gross coke to produce a net ton of iron, or 4651 pounds of coal. (p. 128)



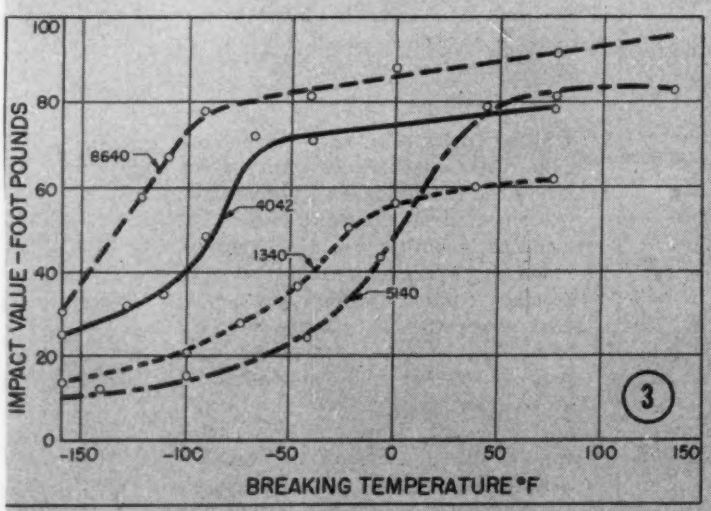


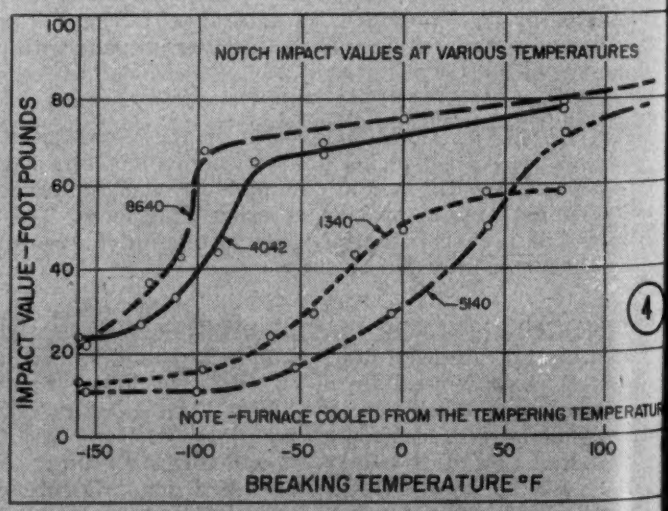
Selecting

In summarizing the present day approach to the choice and application of automotive steels, the author points out the following factors to be considered:

By W. E. JOMINY
Staff Engineer
Chrysler Corp.
Detroit

1. There is not much difference in the engineering properties of alloy steels so long as they are properly heat treated.
2. Proper heat treatment involves obtaining tempered martensite at the locations of high stress.
3. Greatest difference between alloy steels is the difference in their hardenability.
4. Since to minimize distortation it is necessary to quench most important parts in oil, the amount of hardenability to harden the part in oil determines the minimum acceptable hardenability that the steel may have. If distortion is not a problem, enough hardenability to harden in water is all that is required.
5. For parts stressed in bending or torsion it is considered good practice to have not less than 90 per cent martensite in the outer layer of any portion in the as-quenched condition. This layer need not have a depth of more than one fourth of the radius. For parts stressed mainly in tension, such as bolts, 90 per cent martensite to the center is desired.





Some of the more important factors involved in predicting fabricating behavior and probable successful mechanical performance of a steel in some mechanical part are enumerated in this timely discussion. Recent experience indicates that much cheaper steels can be used than were formerly thought necessary

Automotive Steels

PROPER choice of steels for automotive applications is of fundamental importance to all of us in the automotive industry. Much work and study has been applied to this subject by many of the automotive organizations. Several of these organizations have a great deal of information and talent available and yet each has arrived at different steels which presumably best fit its requirements for applications which appear quite similar. It appears that we do not see eye to eye on this subject.

Selection of steels has been developed by the trial and error method; past experience is the main criterion upon which the steels are chosen. So many factors are involved in the choice of steels that it is easily possible to get several answers to the study depending upon which of the factors is given the greatest weight.

More than a quarter of a century ago the present writer wrote an article[1] on this same subject and listed the following as factors affecting the choice of steels: Tensile strength, ductility as represented by the per cent reduction of area and per cent elongation, endurance limit, resistance to wear, resistance to corrosion, high tensile properties when hot, resistance to scaling at elevated temperatures, magnetic permeability, forgeability, practical annealing cycle, ease of heat treatment, control of distortion, ease of straightening, machinability, freedom from serious problems in producing the steel at the mill, availability, design of the part for which the steel is chosen, equipment available and last but not least the cost of the steel.

Concerning cost, a statement is made in this article, "The most economical steel is not necessarily the one with the lowest first cost". While each of these factors is not necessarily involved in every choice none of the factors may be omitted since certain specialized uses require them. Looking at these factors in the light of present day requirements there seems very little to be added with the possible exception that today we would not omit the consideration of hardenability which was covered only rather ambiguously by the eleventh factor, "Ease of heat treatment". It appears that as long ago as this article was written we had a pretty good idea of what was needed and our progress since then has been mainly in achieving these needs.

Since the time of that early article have come the development of stainless steels, nitriding steels, grain size control in steels, steels which have strength at high temperatures and resist oxidation, better machining steels, structural steels containing molybdenum, needled steels, NE steels, the carbide tools enabling us to cut steels at higher hardnesses, and the concept of hardenability, isothermal treatments, dry cyaniding, cycle annealing, induction hardening, metal spraying, chromium plating, arc welding, flame hardening, shot peening to increase fatigue life and furnace atmosphere control. While gas carburizing was carried on to a limited extent in this early period, great difficulty was encountered in control both of quality and depth of case.

One thing is quite evident in comparing alloy steels used 25 years ago with those in use today in the automotive industry. We have been successful in using the steels which have the lowest first cost in the applications of our highest production parts. The steels most used 25 years ago were the SAE 6100 series, 3100 series, SAE 2300 series and the SAE 3200 and 2500 series. Today our greatest usage seems to be in the SAE 5100 series, the 4000 series, the 1300 series, the 8600 series and the 4100 series. It is quite apparent that we have found it possible to use much cheaper alloy steels today than were used in our early experience.

An observation which has helped a great deal to simplify the choice of steels has been that in the

Fig. 1—Fatigue strength of steel in the hardness range from 250 to 300 brinell, with various surface finishes from ground to as-forged condition

Fig. 2—Relation between endurance limit and tensile strength for steels of various structures. It will be noted that some of the other structures are nearly as good as tempered martensite

Fig. 3—Notched bar impact values for steels SAE 1340, 4042, 5140 and 8640 when quenched from the tempering temperature

Fig. 4—Notched bar impact values at various temperatures; furnace cooled from tempering temperature

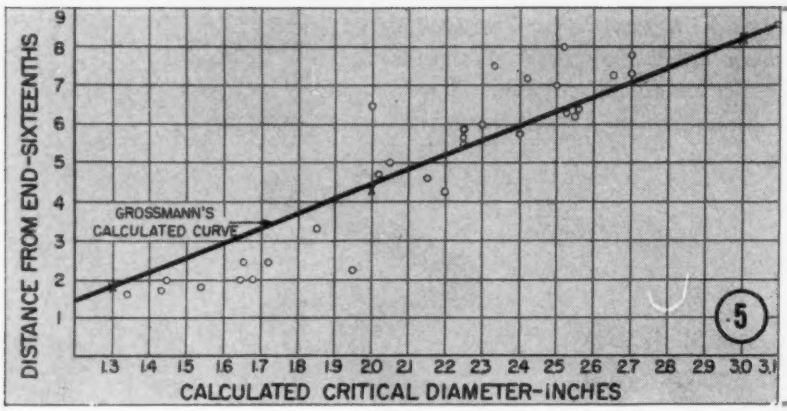


Fig. 5—Relationship between calculated critical diameter and actual hardenability, SAE 4000 series

Fig. 6—Locations of equivalent hardness between end-cooled bar and steering knuckle, SAE 4050

Fig. 7—Locations of equivalent hardness between end-cooled bar and axle shaft SAE 4063

hardness range from 200 to 400 and even 500 brinell any of the standard alloy steels may be heat treated to give the same tensile properties as any other. Conclusion of this observation is that the most expensive and least expensive alloy steels will give the same physical properties when properly heat treated. The joker in the statement, of course, is the clause "when properly heat treated". Parts with large sections cannot be given the proper heat treatment unless the steel has sufficient hardenability and if high hardenability is indicated it is not obtainable in the lowest priced alloy steels.

Tensile Properties—Since the tensile properties of the common alloy SAE steels are the same if properly heat treated, then the endurance limit of these steels should be the same since the endurance limit is related to the tensile strength. Endurance limit is a very important property of automotive steels because nearly all service requirements subject steels to fatigue stresses and the service performance of the steel is predicated on its ability to withstand fatigue loads. The usual approximation for endurance limit is 50 per cent of the tensile strength, but too often it is forgotten that this is the value obtained with highly polished surfaces free from notches. The endurance limit, if the steel has a machined surface is lower than 50 per cent of the tensile strength and if it has a surface produced by forging with no machining it is very much lower.

Fig. 1 shows the S-N curves for steel in the hardness range from 250-300 brinell with various surface finishes from ground to as-forged condition.[2] As will be seen from these curves, the endurance limit varies from about 45 per cent of the ultimate strength for ground surface to about 18 per cent for steel with the as forged surface. As the number of cycles to failure is reduced by increasing the load the effect of surface finish becomes less until the load of 90 per cent of the ultimate strength is reached at which point the surface effect is pretty well eliminated. The notch effect whether due to surface conditions or geometry of the part affects the endurance limit and the impact strength.

Percentages given in Fig. 1 are for the range of 250-300 brinell as stated above. If the hardness is lower the percentage of the tensile strength to give the endurance limit for the as forged surface condition increases, and as the hardness increases the percentage value decreases. In the hardness range of 175 brinell for steel with the as forged surface the endurance limit is about 25 per cent of the ultimate strength, and in the range of 500 brinell the endurance limit is reduced to 10 per cent of the ultimate strength. The endurance limit for steel with a ground surface shows changes in the same direction as the as forged surface but the changes are only very small. For the 175 brinell range the endurance limit is 50 per cent of the tensile strength whereas when the hardness is 500 brinell the value is 40 per cent.

All of these values assume that the steel has a microstructure of tempered martensite. It has been shown that the best endurance values are obtained when the steel has been heat treated to give tempered martensite and the tempering temperature has been high enough to reduce the as quenched (martensitic) hardness about 6 to 10 points rockwell C.

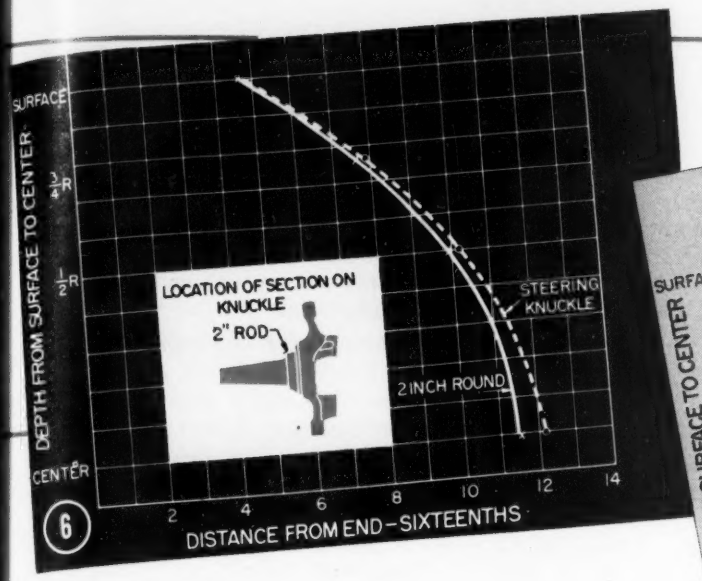
Fig. 2 shows the endurance limit of steel which has been heat treated to give tempered martensite to be higher than with any other structure.[3] It will be noticed that some of the other structures are nearly as good as tempered martensite.

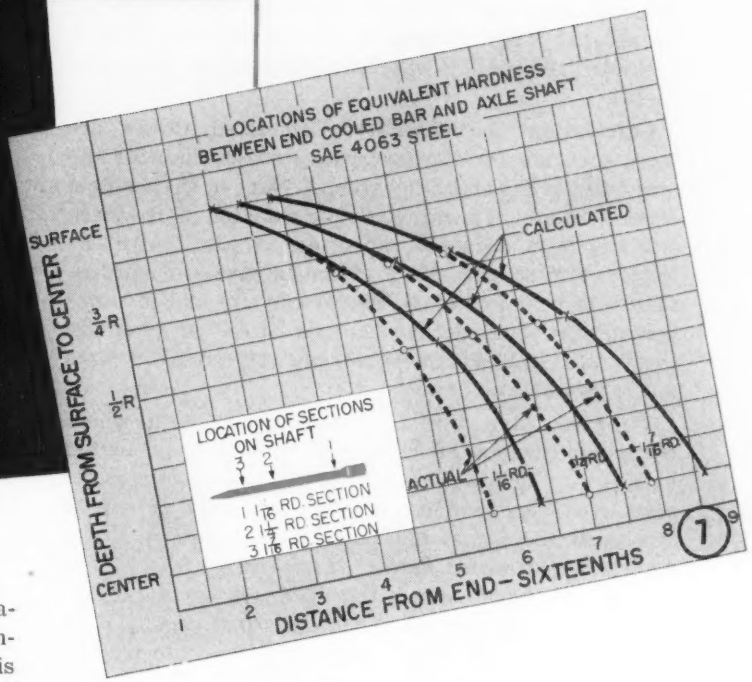
Impact Resistance Studied—There is another behavior of steel which has been given a good deal of study in recent years. This is the impact resistance which is tied in with the per cent contraction of area obtained in the tensile test. While the per cent reduction of area or per cent elongation give data comparable with the impact test, the latter is more easily made. It has been observed that whether a brittle or ductile fracture is obtained in the impact test depends upon the sharpness of the notch in the test bar, the speed of load application and the temperature of the test.

By making a series of impact tests at various temperatures, it is possible to determine the temperatures below which brittle fractures result. Making the notch in the test bar sharper, or applying the load at a higher rate of speed has the effect of raising the temperature at which brittle fracture occurs. Obviously, the lower the temperature required to obtain a brittle fracture the more ductile or notch resistance the material is.

Having a definite steel composition it is generally considered that the structure which gives the lowest temperature required to produce a brittle fracture is tempered martensite. This is true at least in the hardness range of rockwell C 50 and below. Also, in general the higher the hardness the higher the brittle transition temperature.

It has been found, however, that although tem-





pered martensite gives the lowest transition temperature from brittle to ductile fracture for a given composition change in composition of steel will affect this temperature. Also, the cooling after tempering will affect this transition temperature with some steel compositions. Fig. 3 shows the notched bar impact values for the steels SAE 1340, 4042, 5140 and 8640 when quenched from the tempering temperature and Fig. 4 when furnace cooled from the tempering temperature.[4] All of these steels were made by the open hearth process and were heat treated to give tempered martensite with a hardness of rockwell C 29-32.

It will be observed that steels really do differ in this behavior. All of these steels have the same microstructure, that is tempered martensite, but the composition of the microstructure affects the transition temperature.

Value of Impact Test—Just what value the impact test or ductility as measured in the tensile test has in the performance of steel in automotive application is debatable. How much ductility is required has been discussed at length by many qualified engineers. All seem to agree that some ductility is needed. H. W. Gillett[5] seems to feel that a small amount is sufficient. H. F. Moore[6] that 1 per cent elongation in 2 inches is satisfactory. We are all aware that gear steels are subject to large fatigue loading yet their elongation is very small, especially the carburized and hardened gears. To what extent notch brittleness as measured by impact tests affects notch sensitivity in fatigue performance needs careful study so that we can find how to use this information.

J. O. Almen in numerous publications has emphasized the need for having the retained surface stresses in steel in compression in order to raise the endurance limit. By effecting the depth of hardening the steel composition will effect this condition. Also carburizing and nitriding produce compressive stresses at the surface which have the effect of increasing the load carrying capacity in tension. Since in general the allowable stress in compression is higher than in tension increasing the load carrying capacity in tension is highly desirable.

Tempered Martensite—A most important step in organizing our understanding of the behavior of steel is the finding that tempered martensite gives the best mechanical properties which can be developed by heat treating the steel, particularly the best impact resistance, per cent elongation and reduction of area, with a given tensile strength and the best fatigue resistance when the hardness is below rockwell C 50. As far as we know the effect of alloy additions modifies these properties only very little (except the impact notch resistance) the chief effect being to retard the formation of pearlite and bainite during the hardening, or quenching process. This, perhaps, is a corollary to the first observation that the same physical properties may be developed with any alloy steel if the heat treatment is proper. The proper heat treatment is that heat treatment which will produce martensite during the quenching process.

Since for most applications tempered martensite gives the top performance that can be obtained with a given composition, it will be desirable to obtain martensite during the quench in hardening the steel. While 100 per cent martensite is desirable, there is not much lost if we obtain nearly all martensite with perhaps some bainite as shown in Fig. 2. Most applications exert bending or torsional forces which give the highest load at the surface, and these stresses decrease to zero at the center.

While composition seems to have only a small effect on the engineering properties of structural alloy steels, provided a microstructure of tempered martensite is obtained, it does have a marked effect on the hardenability. Hardenability of the steel thus becomes a very important consideration in applying it to a given part. The hardenability limits for most SAE steels are well known and means of measuring the hardenability have been standardized by the SAE. Means

of calculating the hardenability have been developed by several investigators, and while the calculations are admittedly only approximations they are quite useful.

Calculating Hardenability—Calculated values are more accurate for the manganese steels than for the other single element alloy steels. Next to these single element steels in accuracy are the double alloy steels, and the least accurate values are obtained with the triple alloy steels. Most formulas give the hardenability in terms of ideal critical bar size and it is important to observe that the bar sizes, as given by these hardenability formulae, are not practical sizes but rather abstract values.

To give some idea of the accuracy with which hardenability may be calculated, a curve is presented in Fig. 5. This shows the relationship between the calculated hardenability of some 30 heats of Amola steel and the actual hardenability obtained with the standard end cooled bar on these same heats. Solid line on this curve shows the distances on the standard bar that correspond to the centers of various bars of the critical diameters listed, and the dots plotted show the distances actually obtained. The line is plotted as a function of the calculated hardenability and if the calculation were absolutely accurate all points would lie on the solid line. Distance from this line indicates the inaccuracies that are obtained in calculated hardenability. It will be seen that the agreement is good enough so far as averages are concerned but that the individual points vary considerably.

Practical Application of Hardenability—Since the composition of steel markedly affects its hardenability, the choice of steel for any part will depend largely on its hardenability. A. L. Boegehold[7] presented a method for choosing a steel of the correct hardenability by sectioning the part at the location where good microstructure is needed and measuring the hardness across this section. From the same steel from which the part is made a standard end cooled bar is made and hardenability of the steel determined. The hardness of the sectioned part is then compared with the hardness on the end cooled bar and from this comparison the cooling rate at the various locations is determined.

Once the cooling rate has been determined it is possible to choose a steel which will harden satisfactorily with this cooling rate. To apply this principle to shop problems let us consider several parts. Suppose we consider a part such as an automobile steering knuckle, which has an irregular shape as shown in Fig. 6, and which is being hardened by quenching in oil from a suitable austenitizing temperature.

It is desired to know what the cooling rate is at certain locations on this part as quenched in production operations. The locations at which we wish to know the cooling rate are those at which failure may occur in service. At such locations it is necessary to have a microstructure which will give the maximum physical properties that we can obtain in steel. The place of failure for this steering knuckle, if it is broken by applying larger loads than can occur in service, is at a point just a little to teh left of the arrow at the radius between the 2-inch round section and the tapered section. To determine the cooling rate at this location parts made of several heats of steel are followed through production hardening and sectioned through the vital point just described and then a hardness traverse is made from the surface to the center of each section.

Hardness Compared—From the same bar of steel from which the knuckle is forged, a standard end cooled hardenability bar is machined and hardened in conformance with the standard hardenability test. Hardness obtained on the end cooled bar is compared with the hardness obtained on the cross section of the piece and it is assumed that points of equal hardness will have equal cooling rate. Since the cooling rates for all points on the end cooled bar have been determined, it is then possible to deduct the cooling rate at various points in the section.

Two steering knuckles from each of ten heats of steel were followed through our processing and hardness traverses made as described above. From the bars from which these steering knuckles were forged, end cooled bars were made and standard hardenability tests were run. By comparing the location of identical hardness on the end cooled bar with that in the section, the dotted curve on Fig. 6 was obtained.

It will be seen that the cooling rate is quite similar to that obtained in a 2-inch round bar quenched in still oil which is shown by the solid line. From this curve it is apparent that any steel which will harden to 90 per cent martensite at 10/16-inch on the end cooled bar will harden to 90 per cent martensite at one-half the distance from the surface to the center of the critical section of the steering knuckle. Further, any steel which will harden to 90 per cent martesite at a distance of (*Please turn to Page* 122)

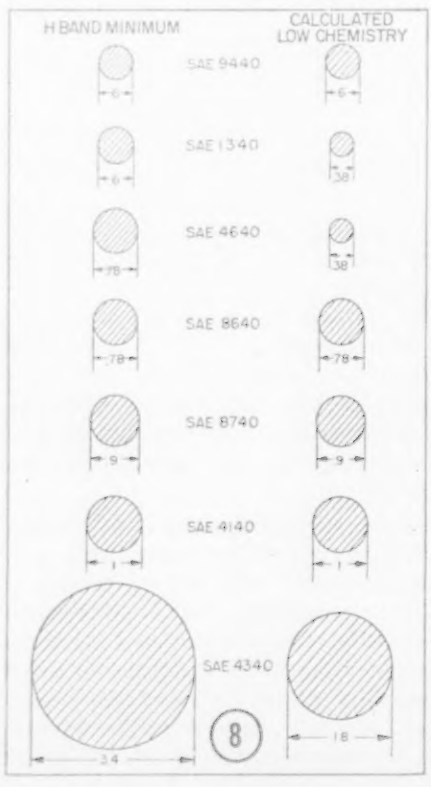


Fig. 8 — Bar sizes which will just harden to rockwell C50 at ¾-inch radius when oil quenched

Seen and Heard in the
Machinery Field

By GUY HUBBARD
Machine Tool Editor

BETTER MACHINE SHOPS: For several weeks I have been on the receiving end of an avalanche of reports from the tool engineering industry, covering in detail what 300 leading companies in that industry will exhibit at the ASTE Show in Cleveland March 15-19, 1948 (see page 93).

My overall impression is that the sharp distinction which used to be drawn between the toolroom and the machine shop, rapidly is disappearing in many American metalworking plants. That applies to machines, to gaging equipment, to lighting and ventilation, to lubrication, and to tooling in all its phases.

There are many reasons for this—one being that requirements for fit and finish on high grade production work today equal or surpass those on toolwork of a few years ago. That calls for manufacturing equipment which will work to "tenths" and instruments which will measure to "tenths", without a lot of beating around the bush on the part of those who do the work.

Another reason, I believe, is that too obvious class distinctions in shops are not good for morale and are not in the American democratic tradition. Once upon a time one group wore white aprons and worked in good light and fresh air. Too many others wore dirt-caked overalls and worked in dim light and air laden with fumes and dust.

In my estimation, the traditional "dirty machine shop" and the old-time livery stable are two institutions over whose passing no tears should be shed.

INVOLUTE THUMB: One of the speakers at the annual meeting of the Society of Automotive Engineers made reference to "the demise of the man with the involute thumb" as one of the milestones in the history of the gear industry.

As a matter of fact there actually were—back in the days when cast tooth gears were in vogue—patternmakers who used their thumbs as templates for gear tooth profiles. Tables of measurements also used to state that "three barleycorns make one inch".

The extent to which gear design and manufacture have been refined within a couple of generations is almost unbelievable. It is driven home by comparison between the ponderous gear boxes of the relatively low-powered automobiles of 1908 and the small, compact transmissions of 1948 which actually transmit far more power than their "ancestors" of 40 years ago.

Mathematicians, designers, metallurgists, machine tool builders and tool engineers share honors equally in the refinement of gearing and in the production of precision gears. The action of machine tools has been described as "applied geometry in metalcutting". That is true particularly of the cutting and finishing of gear teeth of automotive and aircraft quality.

By the same token, it applies also to the cutting and finishing of gears used in machine tools—including gearmaking machines. Much has been said about the influence of modern machine tools on the automobile. Not so well recognized is the influence of the automobile on the modern machine tool.

Lift the covers of the headstock or the feed works of any top-flight lathe of 1948 vintage, or any gearmaking machine. Look at gears, clutches, bearings, etc. You will see exactly what I mean.

FOUNDRY BUYS MACHINE MAKER: It is not at all unusual for a machine tool builder to buy a foundry, but when a foundry buys a machine tool builder—that's news.

It happened on January 2, 1948, when American Steel Foundries acquired the King Machine Tool Co., Cincinnati, long and favorably known as a builder of King vertical boring mills and Sebastian lathes. The business will continue as the King Machine Tool Division of American Steel Foundries, which five years ago took over Elmes Engineering Works, Chicago, under a similar arrangement.

For many years the moving spirit of the King company was Edward A. Muller, now in "active retirement". Mr. Muller, highly respected throughout the industry, served as president of the National Machine Tool Industry in those difficult years 1932-34, when NRA was in flower.

His advice and his leadership was extremely valuable then—he could be valuable now. It strikes me that the association should have a Council of Elders through which men of Mr. Muller's caliber could retain a connection with the association.

BETTER PUBLICITY RELEASES: Not long ago the American Gear Manufacturers Association sent to its membership a reprint of an open letter to manufacturers seeking editorial publicity for their products. It is signed by "Anonymous". Whoever he is, the writer hit the nail on the head.

"First," he says, "an editor must have evidence that the item is new—that is what news implies. Second, the editor should not be forced to wallow through several hundred or several thousand words in order to find 50 or 100 or 200 which he can print.

"Third, make sure that he quickly can find the name and address of the manufacturer (not the publicity counsel, not the advertising agency) and also the postal zone number. Fourth, have all photographs identifiable as to source and subject.

"Fifth, see to it that every description is based strictly on the products own news merits — not sugared with hints as to possible advertising, not cluttered up with some individual's desire for personal publicity, not padded with blurb. Sixth, make the release easy to read both in length and legibility. In other words, stick to crisp, factual, brief statements —cleanly and clearly reproduced."

WHAT TO DO ABOUT *Industrial Fatigue*

By BENJAMIN MELNITSKY

Good physical and mental employee health as well as correct working conditions are the forces that can fight fatigue's drain on productive capacity. In this analysis, factors adversely affecting employee efficiency are examined one by one and some helpful remedies suggested

OF all the definitions for fatigue, perhaps the best is the simplest one: Fatigue is primarily a condition of being tired. To this phrase can be appended as many qualifying statements as may be desired.

Industrial fatigue, which is just another way of saying fatigue as it operates within the scope of the plant or factory, is in reality a catch-all phrase. The true nature of fatigue has never been explained, nor can it ever be used as an exact and precise term. Lack of proper nourishment, either insufficient food or the wrong kinds of food, will cause an impairment of physical and mental prowesses—or fatigue. Great expenditures of energy which burn up excess amounts of food from the body will cause debilitation, weakness, lack of breath—or fatigue.

Boredom and lack of new interests will cause a decided drop in the efficiency of the human mind and body. Bodily or mental ills will cause tiredness, malaise, fretfulness, lack of comprehension. Lack of sleep, intemperance, worry, family affairs, love, hate, in short, almost every phase of human affairs and human environment are causes of fatigue.

Fatigue Outside the Plant—If we could assume "fatigue" to be the name and subject of a motion picture, we would almost have to assume that the leading character would be called "nutrition". The "balanced diet", the "vitamin-mineral-calcium" needs of the individual, "proper caloric intake", the trinity of "protein-carbohydrates-fats", and the other choice phrases of the professional nutritionist are actually quite cogent to the subject of fatigue.

Although the dangers of bad national eating habits transcend the field of industrial fatigue, from the limited viewpoint of fatigue in industry there is sufficient justification for action on the part of employers. Of course, management can not tip-toe into the worker's dining room, lean over his shoulder, and supervise his eating; however, there are certain actions that can be and are being taken. They are:

(1) Insure that workers get at least one proper meal daily by serving nourishing, well-balanced luncheons in the plant's cafeteria.

(2) If the plant has no food-serving facilities, encourage the opening of new restaurants in the neighborhood of the plant and encourage existing

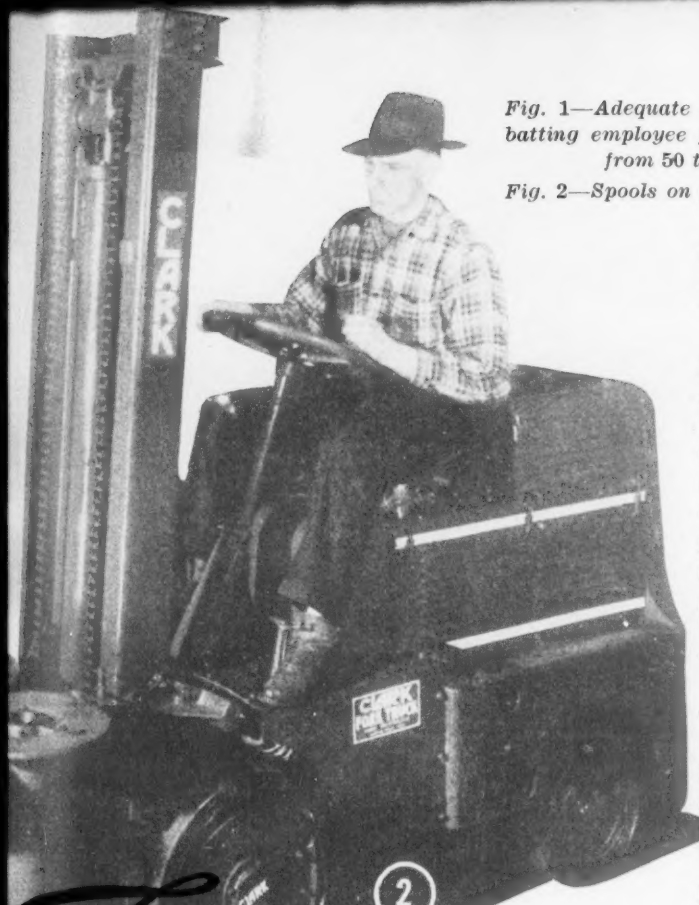


Fig. 1—Adequate lighting plus soundproofing are two factors in combatting employee fatigue. Special equipment will serve to reduce noise from 50 to 85 per cent. Courtesy Johns-Manville Corp.

Fig. 2—Spools on pallets transported to destination by Clark fork truck

Fatigue

eating places to serve wholesome, well-prepared meals.

(3) Undertake educational program designed to create employee interest in better eating. A program of this type can use plant publications, bulletin boards, posters, rallies, and other promotional media available to the plant.

(4) Work in conjunction with local newspapers and radio stations to publicise daily menus and worthwhile food programs. Co-operate with local electric and gas company to arrange for demonstrations on nutrition to be given to wives of employees.

(5) Co-operate with state and national departments of labor, agriculture, etc. that are active in the problems of nutrition and food.

Medical Plan—Physical illness, as a major cause of fatigue, robs men of their energies and the plant of the men's productive capacity. The use of hospitalization and medical care plans encourages employees to care for their ills by making it financially possible for them to do so. Medical costs are now so high that many workers delay needed operations and treatments with a consequent impairment of their health and their ability to produce on the job. It is wise to provide such care not only for employees but for members of their families as well. Knowledge that his family will be protected in the event of illness or accident prevents fatigue by reducing employee worrying.

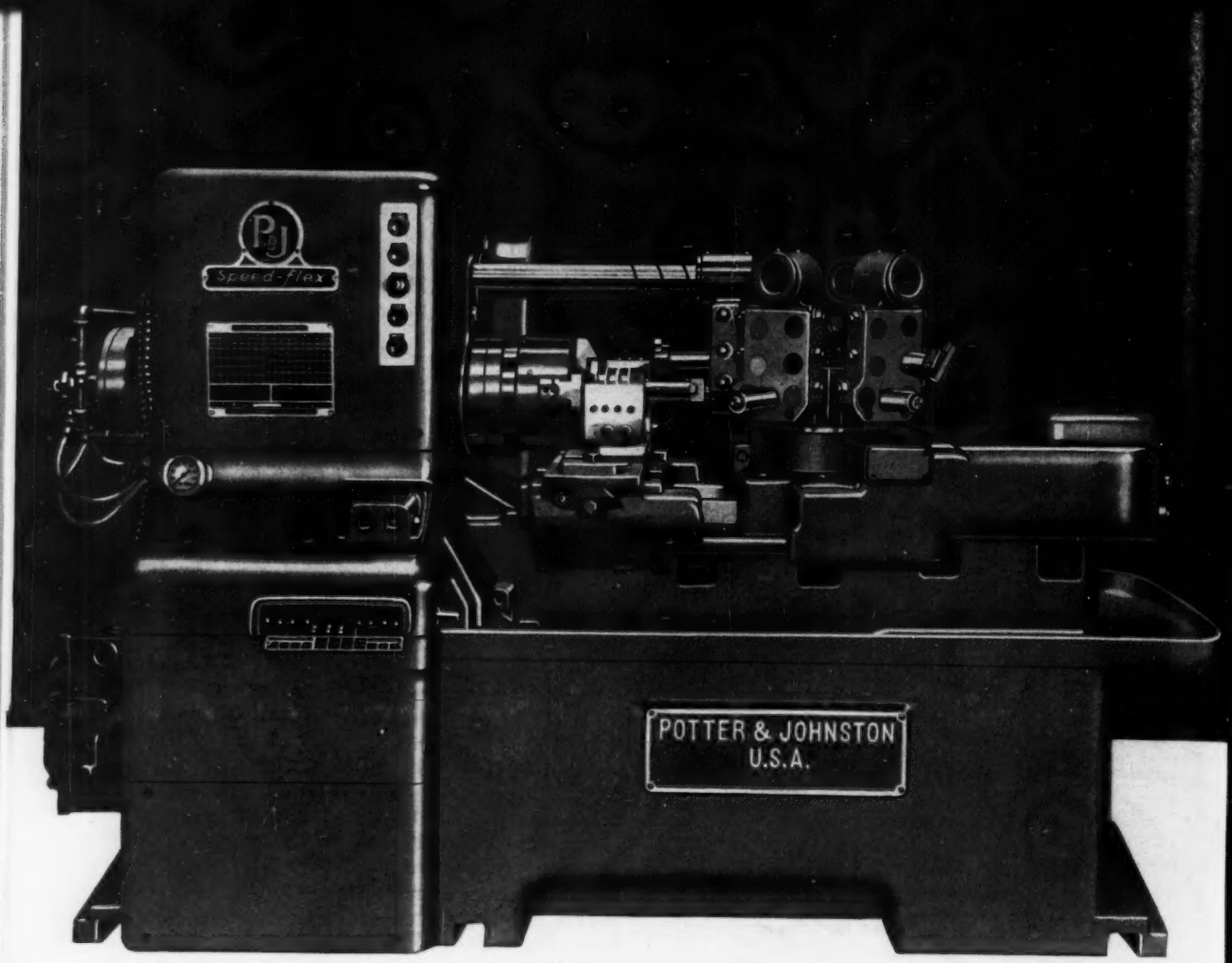
In addition, there should be an adequate plant hospital for the treatment of accidents, emergencies, and minor ills. The prevalent policy of precluding treatment for cold, hangovers, headaches, etc. is not a very far-sighted one. A man suffering from an upset stomach will not be working at maximum efficiency. Were he allowed to go undisturbed to the plant hospital, a simple sedative administered by the nurse would ease his pain and restore him to full productivity. If there is a plant doctor, he should be available for free consultation on all health matters up to the limit of the time he has available.

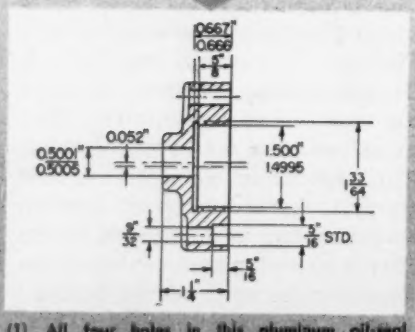
Worry—To catalog man's worries is to tamper with infinity. A man may worry about his garden, the housing shortage, the cost of living, etc. and in so worrying he will become fatigued. On the surface, it might seem that management can do little in this respect, except, perhaps, do some worrying itself. Yet, even here some action can be taken. Though the plant cannot solve the housing shortage, it can ameliorate the problem to some extent. Plant newspapers, bulletin boards, and other available media should be used for listing of apartments to rent, homes for sale, and rooms to let.

A fictionized example of another type of worry might be appropriate at this point. Machinist John Doe is worn out by worry and lack of sleep and his production record shows it. The reason, as he is only too eager to explain, is his wife, an exceedingly irritable woman who keeps him up all hours of the night with her complaints. Placating an irate wife might seem to lie beyond the scope of plant management; yet, the cranky Mrs. Doe is important because her actions are putting a decided crimp in the lathe department's output. Closer examination into the marathon tiff at the Doe household might reveal that the cause of the little woman's irascibility is none other than Mr. Doe. She is cranky because when he comes home from work he is dead tired. He doesn't say much, just plumps into the chair and disappears behind the sport's page.

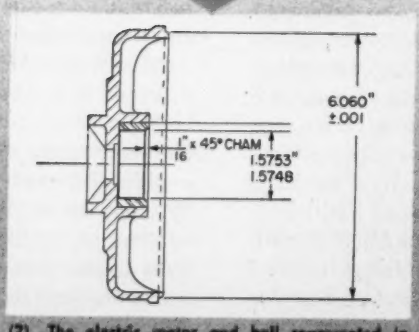
Further investigation might reveal that in John Doe's plant, handling work at machine side is done manually and that John Doe is simply and needlessly being overworked. By installing a small hoist over his machine, John Doe is relieved of all heavy work. He comes home from work with a twinkle in his eye, and domestic bliss reigns. This admittedly fictional example illustrates that good shop practices, although their original purpose may be entirely different, have the secondary effect of reducing worker fatigue.

New Interests—The best prescription for fatigue brought about by worry is fewer idle hours, new interests, an active life during and after working hours. This is one prescription which all plants can fill. Some compounding ingredients to be used are as follows: Extra-curricular plant (*Please turn to Page* 112)

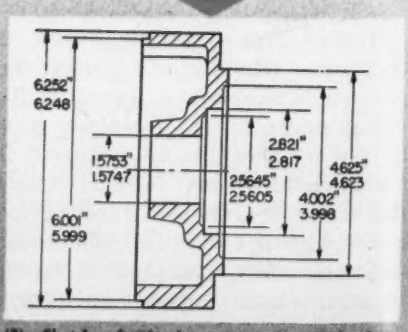




(1) All four holes in this aluminum oil-seal cover are drilled with one drill head. The center hole and the small hole are reamed and bottom hole (A) counterbored with a second drill head. Note the eccentricity of the center hole relative to the 1.500" counterbores.



(2) The electric motor and bell represented in this sketch is an aluminum die-casting with a steel insert. This frail casting presented a vibration problem. Tungsten-carbide tools are used in machining the part, with a production rate of 42.5 parts per hour at 85% machine efficiency.



(3) Sketch of aluminum mounting end plate. Only boring-bars and turning and facing tools are required for this job, no drilling or reaming operations being necessary. The production rate is 37.5 pieces in 51 minute hour.

CMP stainless

THINSTEEL

TRADE MARK

This important message means improved or new stainless products at lower fabricating costs.

CHROME-NICKEL STAINLESS THINSTEEL AVAILABLE FOR FIRST TIME

It's another FIRST for CMP — light gauge 18-8 and other chrome-nickel grades of stainless strip steel with a bright rolled mirror-like finish even in dead soft annealed temper. Stainless fabricators familiar with the lustrous rolled finish generally identified in annealed stainless only with chromium grades such as Type 430 will immediately recognize the possibilities of new applications, increased utility and beauty, together with lowered finishing costs which this interesting development in chrome-nickel stainless now suggests. We will be glad to send you a sample of this new product and will welcome the opportunity to explore any application where a combination of corrosion resistance and beauty of appearance in light gauge metal strip is desirable.

COLD FACTS ON

THINSTEEL

- **EXTRA LONG COILS**
  ... less downtime
- **EXTREMELY CLOSE TOLERANCES**
  ... more parts per ton
- **WIDE RANGE OF PHYSICALS AND ANALYSES**
  ... tailored for your products
- **GAUGES THIN AS .001"**
  ... strength with lightness

C M P STRIP STEEL — PRECISION COLD ROLLED

the Cold Metal Products co.

YOUNGSTOWN 1, OHIO

NEW YORK • CHICAGO • DETROIT • ST. LOUIS • BUFFALO • INDIANAPOLIS • LOS ANGELES • SAN FRANCISCO

Industrial Fatigue—*Continued from Page 89*

activities not only to supply new interests but also to aid in fostering better relations among employees and between employer and workers. A few such activities are hobby clubs, photography contests with prizes and awards, arts and crafts shows, and other competitive and co-operative activities.

In many localities public libraries co-operate with individual plants by distributing books to employees during lunch hours. Many colleges and universities offer extension courses in the plant proper or to special groups from the plant. In many ways, and at a surprisingly small cost, plant management can foster an interest in arts, sciences and literature among its workers.

A person doing close mental work may expend no more than a hundred calories of energy in an hour but at the end of the hour he will be very fatigued. An hour's walk in the park will refresh and invigorate him despite the fact that the walk will have used up twice as much energy. The equivalent of the "walk in the park" can be supplied by the company though plant bowling leagues, athelic events, outings, etc. Here again the cost is negligible and the results obtained in terms of less fatigue are considerable.

Fatigue on the Job—Few, if any, jobs are unaccompanied by fatigue in one form or another. To eliminate the maleffects of fatigue on the worker, the logical place to begin is at the outset when workers are first hired.

Square Pegs and Round Holes—The circus strong man takes in his stride work that would positively dehydrate the side show's fat lady. Similarly, a job that would drive most men to the brink of boredom would probably be just right for a woman. Of two individuals, one normal size, the other whose legs are abnormally long, the former would obviously be better fitted for the job of driving a small industrial truck, he would less quickly become fatigued. A fat man on a job that requires bending will become fatigued much more quickly than a thin man. A person with a high I. Q. would become bored and fatigued on a job that has no responsibility and no opportunity for decision-making. Consideration of the individual's mental and physical characteristics in job placement has as one of its many positive results the prevention of fatigue.

Training on the Job—Test after test shows that fatigue is greatest not only at the outset of a new job but also at the beginning of the work week for an old job. The latter is caused by the fact that it takes time for the worker to get back into the swing of his job after the week-end lay-off. Same factor operates to a far greater extent during the learning period. Any new skill, be it operating a drill press or riding a horse is prefaced by a fatiguing, grueling breaking-in period during which the novice must concentrate all his thoughts on the task at hand.

He will do the job the hard way, make errors, and expend untold quantities of energy. As the trade or skill is mastered, fatigue drops off. Unfortunately,

Fig. 3—Bar handling facilities at Wycoff Steel Co., Pittsburgh

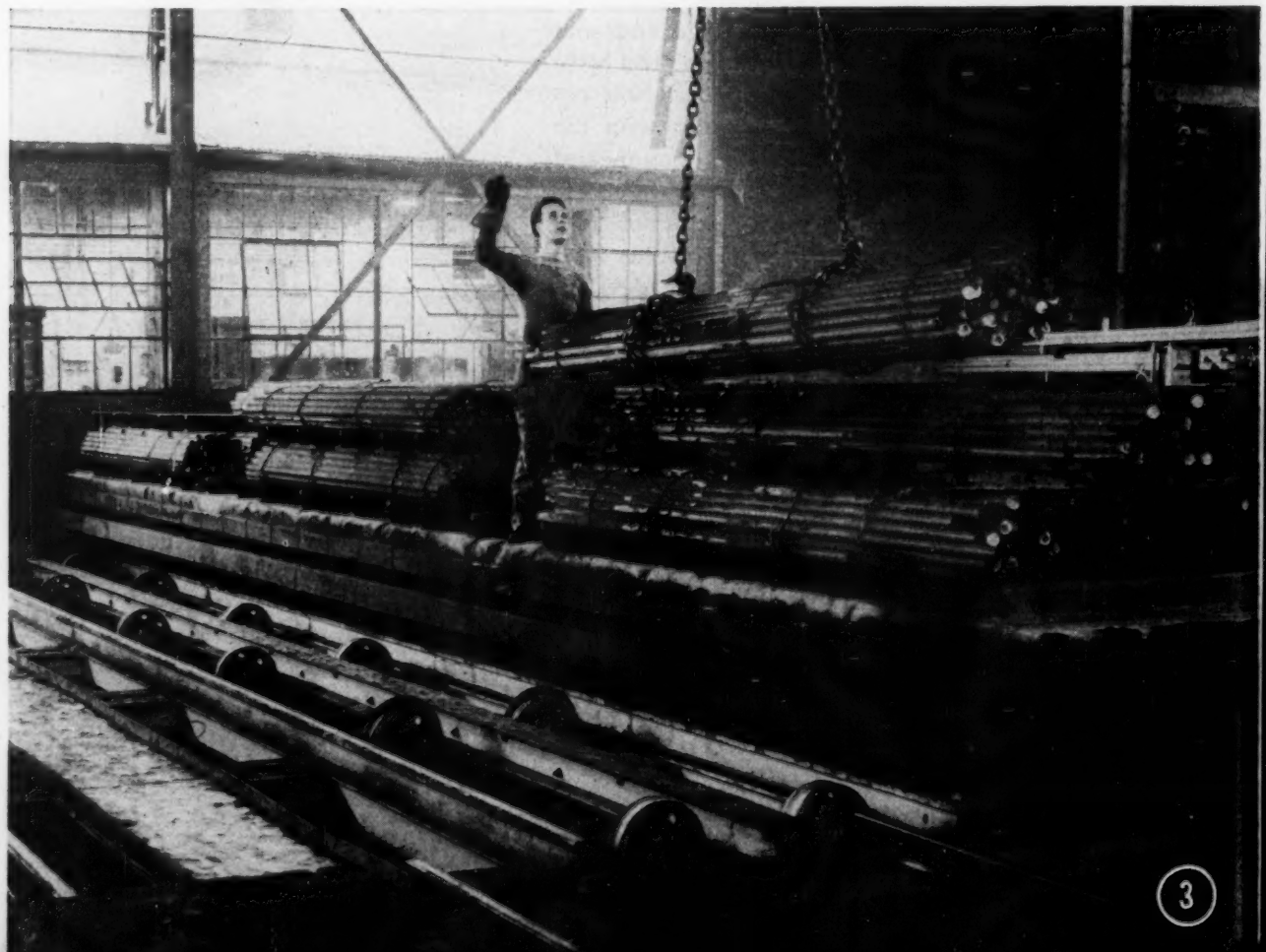


Fig. 4—Conveyorizing methods serve successfully in one of the most precise operations in a porcelain enameling plant. Here workmen in a ventilated spray booth process refrigerator parts. From this point the wet enameled parts are carried by conveyor to the fusing furnace. Courtesy R. C. Mahon Co.

Fig. 5—An example of good plant lighting. Courtesy General Electric Co.

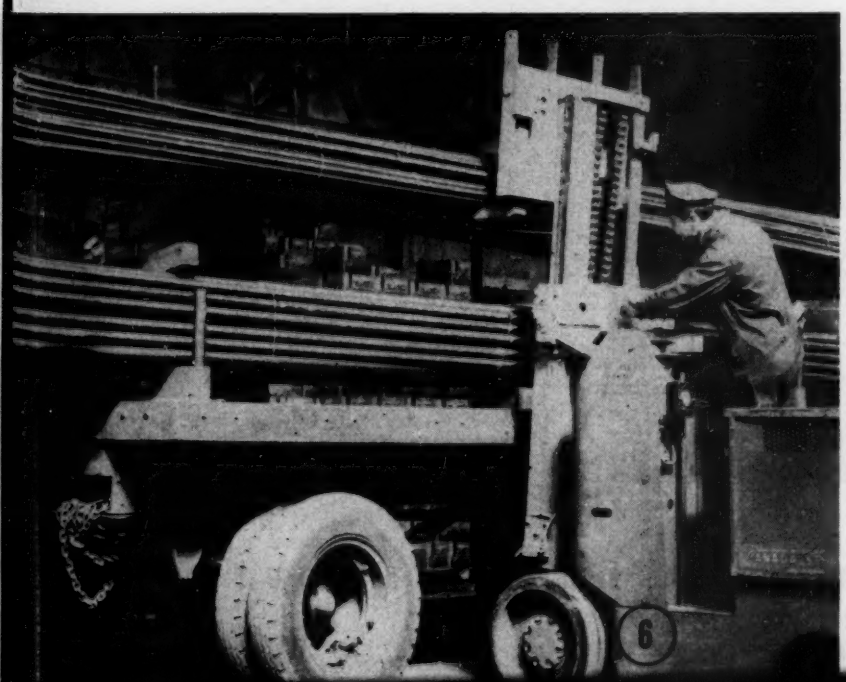
Fig. 6—Example of how the fatigue factor on the job is reduced considerably by using motor power in place of manual power. Courtesy Electric Industrial Truck Association

however, without proper training, the breaking-in period may last for the duration of the job. In innumerable instances employees are so poorly trained that they never learn the correct method of working. If proper training methods are not in use in the plant, the favorable effect of job-training on fatigue should serve as an added inducement for further consideration of training of workers.

Senses and Fatigue—On the job there are many environmental factors which operate through the senses of seeing, hearing and smelling to cause fatigue. In the Nazi torture centers noise was used experimentally to drive people insane. A constant din and blast extending over a long period of time actually led to the victim's mental breakdown. In smaller does, noise results in headaches, nervousness, irritability, and other of fatigue's well-known manifestations.

One way to combat discordant sound is with more sound . . . somewhat like fighting fire with fire. Music from radio, recordings, transcription libraries played over an amplifier tends to blanket discordant noise and give unity and movement to sound. The use of music in industry is in itself a broad subject; however, generally speaking, it can be stated that properly-tailored music does have a definitely advantagous effect in many work areas.

Since many plants have public address systems, it should be a simple matter to experiment with music to determine whether the unique conditions in each plant permit its use. A test period of a few days climaxed by a poll among workers and supervisors will reveal whether music aids or hinders in the fight against fatigue. In those work areas where fatigue is brought about by the dullness and monotony of work, music will in all likelihood serve to inject a note of liveliness and interest. Where extreme concentration is required, even the most soothing music might be distracting and irritating. Actual experiments are the best means of determining the value of music not only in the plant as a whole but in each department and subdepartment.



Heat, light, and noise are forms of energy. Extreme noise usually indicates wasted energy. Loud P.

In Four Great Industrial Areas...
RB&W Makes Strong the Things That Make America Strong

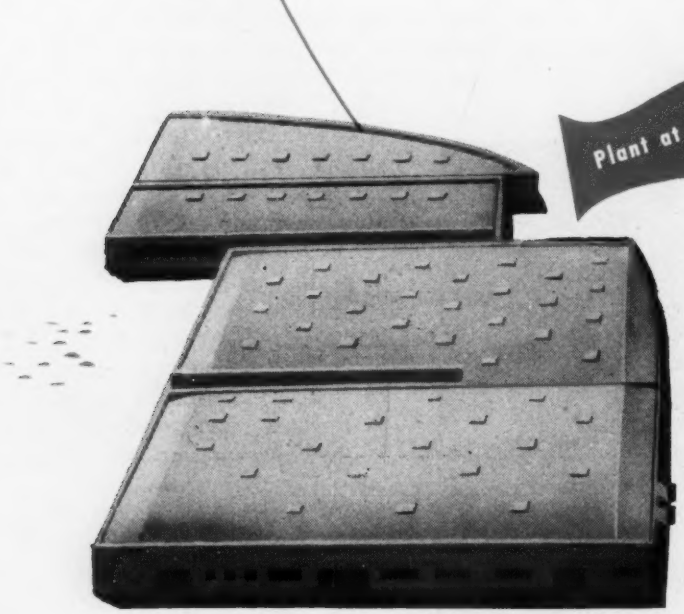
This is America at its best . . . resourceful and enterprising.

103 years ago, a tiny factory in the small New England town of Pemberwick, Connecticut.

Today—four great fastener manufacturing plants, each at the heart of a major industrial area . . . representing investments of many millions of dollars in plants and equipment . . . producing more than 6,000,000,000 fasteners per year.

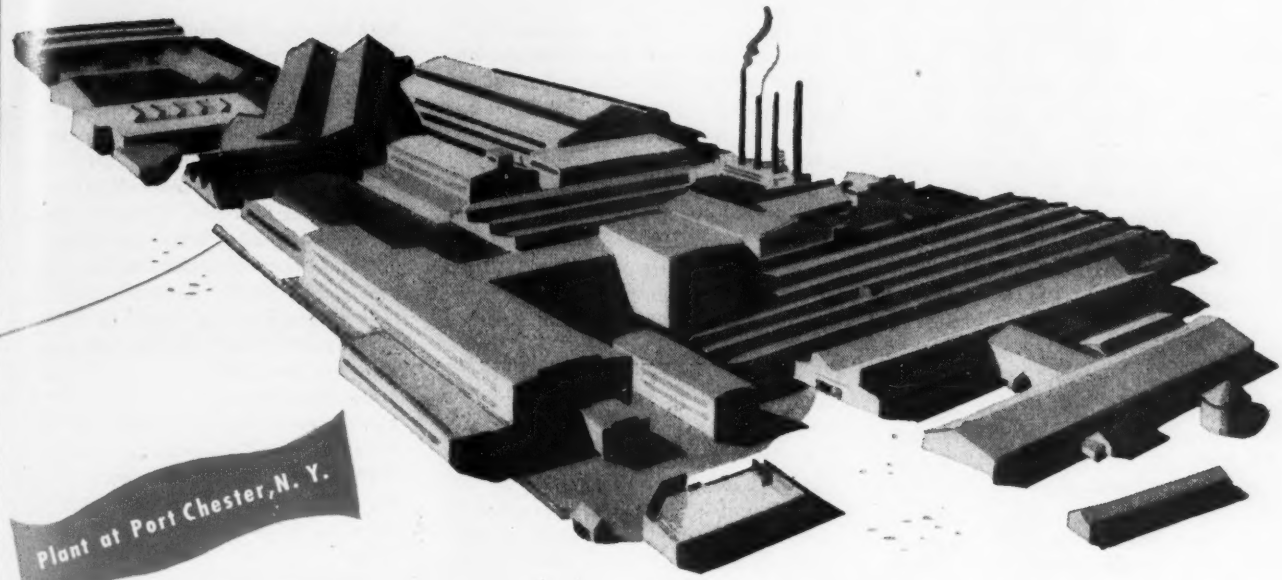
Tomorrow—an even deeper integration into the structure of American industry. Equipped with the fastener industry's finest facilities—both in a geographical and technological sense—RB&W's current commitments call for $3,500,000 for improved facilities, plant expansion, research and development.

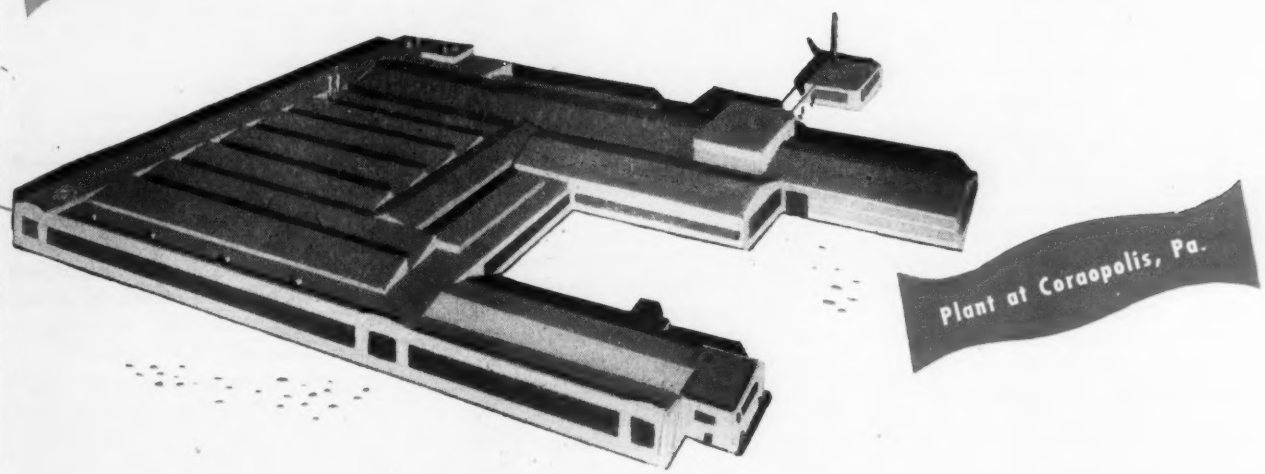
Wherever American industry moves forward, RB&W will be a vigorous part of it, helping it to meet whatever challenge it may face . . . with products and services that match the highest standards of our customers.

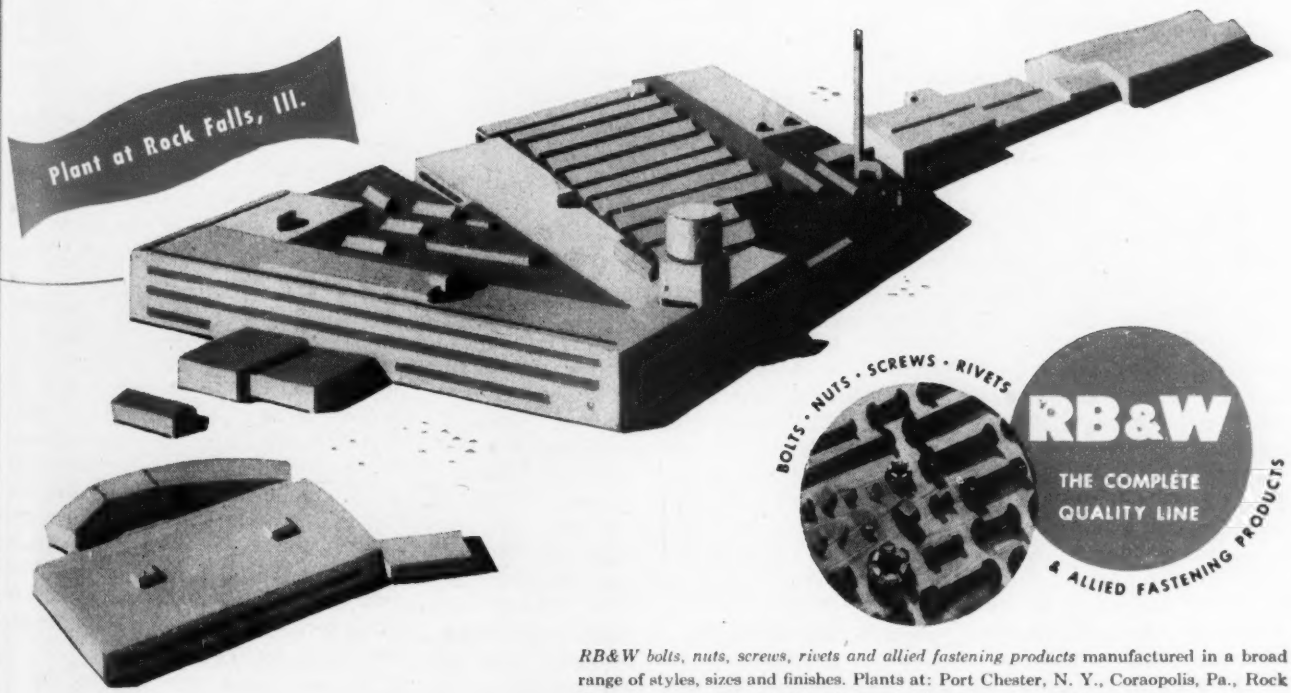


Pictured are the four RB&W plants—at Los Angeles (Cal.), Rock Falls (Ill.), Coraopolis (Pa.), and Port Chester (N. Y.)—*providing the broadest geographical coverage of any bolt and nut manufacturer.*

RUSSELL, BURDSALL & WARD BOLT AND NUT COMPANY







RB&W bolts, nuts, screws, rivets and allied fastening products manufactured in a broad range of styles, sizes and finishes. Plants at: Port Chester, N. Y., Coraopolis, Pa., Rock Falls, Ill., Los Angeles, Calif. Additional sales offices at: Philadelphia, Detroit, Chicago, Chattanooga, Oakland, Portland, Seattle. Distributors from coast to coast.

103 YEARS MAKING STRONG THE THINGS THAT MAKE AMERICA STRONG

A. systems; shouting, yelling, and screaming workers; clanging hammers; etc. are all obvious wastes of energy. When noise is cut, waste is cut. For example, the noisy way to unload castings is to toss each part from the freight car onto the platform with a resulting clatter that would put a boiler maker to shame. The noiseless way is to place the castings on skids and then use an industrial truck to carry loaded skids from the car. The latter makes up in efficiency what it lacks in noise.

The loud way of driving a fork lift truck is to race the motor, blow the horn at all animate and inaminate obstructions, screech the tires around sharp curves, and come to a clattering halt. The quiet way is to drive the truck safely and slowly without noise and without possible accident. Again, the noiseless way is the efficient way of doing the job.

Seeing — Another of the sensory environmental factors is seeing. The eye can cause fatigue just as much as do the ears. Excessive glare, lack of sufficient or proper lights, unshaded luminaires, areas of sharply contrasting light and shadow, uncontrolled sunlight, all have one common end result — fatigue. Use of adequate light must also mean enough of the right kind of light. This entails use of supplementary lighting for close work, proper shading of lamps, venetian blinds for windows to control sunlight, correct selection of nonglaring paint for plant interiors, elimination of shadows by correct spacing of luminaires, and other factors.

Third sensory factor of fatigue is smelling. Good smelling does not necessarily entail mixing in several drams of Chanel Number 5 with the cutting oil, nor does it necessitate wafting cologne through the air-conditioning system. It does entail the elimination of all noxious fumes from such materials as acetone, benzine, carbon dioxide, chlorine, tetrachlorethane, and other chemicals and solvents. Most cases of industrial poisoning are characterized by a preliminary feeling of fatigue which may extend for a few hours or over extremely long periods of time depending on the amount of the air concentration and other factors, however, in all events, elimination of fatigue is tantamount to eliminating the more dangerous effects of these materials. In all instances where such products are used, steps should be taken to provide proper containers for storing and handling, adequate ventilation at all times, and all required personal safety equipment such as gas masks, respirators, rubber gloves and other accessories.

Environment for Work—In the abnormal person the desire to escape the unpleasantness of his life and environment results in schizophrenia, or a wild array of other neuroses and complexes. In the normal factory worker this same desire manifests itself in such milder escape mechanisms as absenteeism, day dreaming, slow-downs, carelessness and fatigue. Nobody knows to what extent fatigue is a subconscious or conscious means for escape; however, the importance of this factor is as well-known as it is undesirable.

A clean, neat, attractive work area logically is more pleasing to the worker and a more desirable place in which to spend eight hours a day. And equally as logical, there would be less need for "escape" from a pleasant work place. Clean washrooms, well-maintained plant interiors and exteriors have many beneficial effects, not the least of which is reduction of fatigue. The psychological effects of color on fatigue are rather tenuous, yet, of some importance.

Broadly speaking, psychological tests show that colors at the blue end of the spectrum are repressive and on some people do have a fatiguing effect. The red end of the spectrum contains the exciting colors which tend to combat fatigue. This power of color has been used quite successfully in the treatment of psychiatric cases. Depressive persons are cured of suicidal leanings by being placed in bright red rooms; whereas, highly excitable patients are calmed down by being placed in rooms painted blue.

Materials Mishandling—Nineteenth century materials handling techniques, which are still to be found in far too many plants, are tremendously important causations of fatigue. Moving materials by wheelbarrow or hand truck, hand stacking of cartons in storage, in short, all manual movement of materials which can be done mechanically is unnecessarily and wastefully fatiguing. The use of fork lift trucks, hoists, cranes, powered hand trucks, conveyors, stacking devices, and all other component equipment of the modern materials handling science should be considered not merely from the fatigue point of view but from the practical viewpoint of efficient management. Physical fatigue caused by unsound handling practices is the simplest type of fatigue, the one that can be combated most readily.

Another phase of fatigue in materials handling is layout of tools, machines, materials, and work at bench, desk, or machine-side. The employee who all day long works awkwardly is in all likelihood doing the job the hard, fatiguing way. Often a plant will go to the great expense of installing hoists, cranes, and other such devices to expedite inter-departmental material flow yet disregard entirely intra-departmental movement of goods. Short distance handling from machine side, to machine, and back to machine side, and then to the next department is of tremendous importance. Time and motion studies or mere observation in the plant will reveal where rearrangement of work benches, use of gravity conveyors, shifting of machines, and similar moves will result in less fatiguing physical labor and swifter material flow.

Corollary to this is the position of the worker at the job. A worker who must stand all day long will logically become fatigued since standing is a physical act requiring a steady expenditure of energy. Sitting for long periods in poorly designed chairs is equally as bad. In many instances the ideal situation is to use properly designed chairs from which the worker may rise or sit as he desires. Such a chair would have a good back rest and will be adjustable in height so that mounting or dismounting can be done easily.

Length of Work—Since fatigue is the logical consequence of work, length of work is naturally the most important of all factors. Discussion about the length of the work week would be more or less rhetorical since in most states and for most industries the 40-hour week is standard. Raising or lowering the work week is a matter of labor relations and law. However, within the set work week it has been found that rest periods are vitally important. There are many reasons for the "5 or 10-minute break".

Primarily is the consideration of bodily utilization of food. Depending on the individual, the type of work he does, and the food he eats, food taken in the morning will be utilized by the body during the early work hours and by late-morning there will be a point when the amount of food in the body declines. By noon, the amount will be so low that hunger sets in and there is a need for additional nourishment. The point of diminishing energy-returns from food often means a point of diminishing production.

To counteract this decline, additional food should be taken during midmorning. Thus, the 5-minute break in the morning can be used for this purpose. Secondly, the rest peri-

od tends to break up the monotony of the work and relieve tensions which have built up on the job. The rest period breaks up the day so that on dull jobs the worker sees before hint not an intermediate period of 4 hours but two periods of 2 hours each broken up by 5 to 10 minutes rest.

Just as it is easier to carry two 50-pound weights than one 100-pound weight, so too it is easier to work two short periods than one long one. Test after test taken on the subject of rest periods show that daily production is increased when rest periods are interspersed during the day. Length of the rest period and the number to be taken depend on individual company factors and the exact nature of work being done.

Other Factors of Fatigue—Very dull jobs, of which there are always some in any factory, can be made less damaging if they are rotated among different workers. On an assembly line, for instance, where there are many unskilled, repetitive tasks, the monotony of the jobs as a whole can be reduced by shifting workers from one job to another. The new environment and the new work, even though it may be dull as the previous one, has the decided effect on the worker of creating interest in what otherwise might be a dull task.

Changes from day to night shifts are almost always accompanied by a period of great fatigue when the worker must readjust himself to a new regime for sleeping, eating, and living in general. If the change is made in the middle of the work week, the period for readjustment is too short; however, if the change is made over the week end, the worker will have several days for a gradual readjustment of his living habits.

Shoes and clothing are important fatigue factors. Foot gear which restricts the flow of blood, tight clothing, etc. all have the effect of inducing fatigue by hindering bodily functions.

Modern approach to employee fatigue is not the paternalistic approach of the benevolent employer doing all these things out of the goodness of his heart. Instead, it is based realistically on enlightened self-interest. What helps the employee helps the plant as a whole.

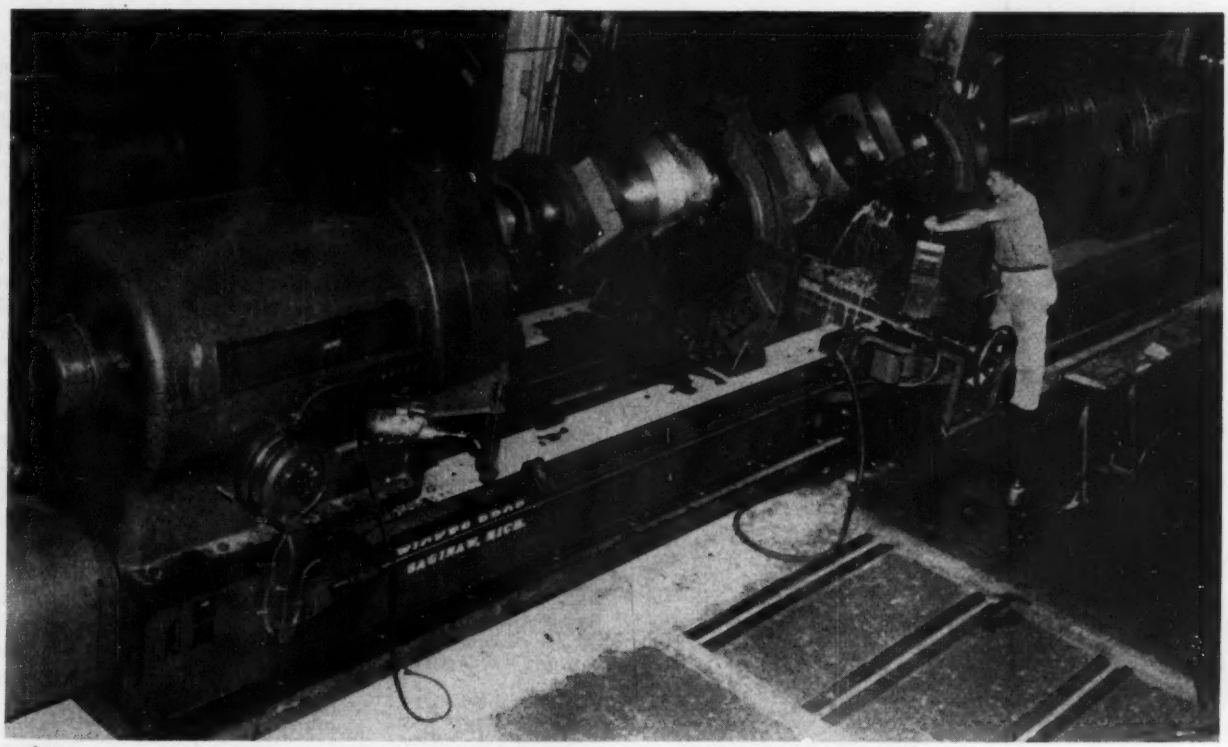
—o—

Fastening of flux filled studs, hooks, and various other fasteners by endwelding with a stud gun eliminating the need for drilling and tapping will be the subject of a technical discussion by R. C. Singleton, technical advisor of Nelson Sales Co., Lorain, O. Lectures, supplemented with sound films in color, will be given at regional meetings of American Welding Society in Toledo on March 9, and in Buffalo, April 22.

Hard Surfaced Drill Bit Developed for Oil Shale

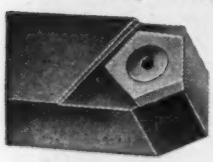
Hard-surfaced drill bits capable of drilling 100-feet without failing or losing gage reduce expense and produce greater efficiency in drilling oil shale, reports James Boyd, director of Bureau of Mines. Worn and dull bits are prepared by grinding cutting edge and reaming points and welding on the hardened material with an acetylene torch. Hard surfacing material used is acetylene tube borium which consists of steel tubes containing cast tungsten carbide.

Copies of Report of Investigations 4177, "Development of a Successful Hard-Surfaced Bit for Drilling Oil Shale", may be obtained free from Bureau of Mines, publication section, Pittsburgh 13.



GIANT METAL REMOVER: Forgings weighing roughly 8½-tons are machined to a finished weight of about 6 tons by above 50-ton Wickes lathe, one of two units installed recently in Springfield, O. plant of National Supply Co., for machining crankshafts of large diesel engines. Thus far, each 45-foot lathe is effecting a 30 per cent savings in machining. Both are power driven at head and tail stocks, action of direct-current motor drive being governed with a variable speed control. Each lathe also provides a speed range of 1 to 25 revolutions per minute and cutting speed of 50 sfm

"Clamped-on" Tools
Solid, advanceable Kennametal tips held by steel clamp and back-up screw.



(PAT. APPLIED FOR)

"Kendex" Tools
Flat, indexable Kennametal tips (rounds, squares, triangles, or pentagons) held by counter-sunk socket screws.

Brazed-on Tools
Many styles and sizes.

Tool Blanks
Hundreds of sizes, in all grades, for making your own tools.

Are you using carbide tooling to the best advantage? Check up. See the results of 10 years of metallurgical and engineering progress at our exhibit. Investigate Kennametal tooling that provides these benefits:

- **3 to 10 times faster cutting speeds** . . . maximum use of available horsepower.
- **Interrupted cuts taken in stride** . . . parts can be ganged; pieces having slots, bosses, etc. can be machined as routine operation.
- **Cut steel in the hardened state** . . . often saving annealing and rehardening operations.
- **One cut instead of two** . . . roughing and finishing operations can often be combined; Kennametal takes heavy cut, leaves smooth, accurate finish.
- **Simplified regrinding and reduced load in grinding room** . . . new methods of mounting minimize grinding requirements; in the case of Kendex tools eliminate grinding altogether.
- **Minimum machine downtime** . . . Kennametal's life is from 5 to 20 times that of tool steel; and new mounting methods often permit resetting tip without changing tool holder.
- **Effective use of Kennametal for light, medium, and heavy-duty machining** . . . because of the availability of hard and strong Kennametal compositions, and the development of strain-free methods of mounting.

Your profit is made at the point of the cutting tool—see cost-cutting Kennametal developments at the ASTE; let our field engineers demonstrate in your shop.

1938-1948

KENNAMETAL *Inc.* Latrobe, Pa.

MANUFACTURERS OF SUPERIOR CEMENTED CARBIDES AND CUTTING TOOLS THAT INCREASE PRODUCTION

Automotive Steels

(*Continued from Page* 86)

8/16 from the end of a standard bar will harden to 90 per cent martensite one fourth of the distance from the surface to the center on the critical location of the steering knuckle.

Using Hardenability Studies — It might be interesting to show how hardenability studies are used in applying steel to new parts or substituted steel for parts which we already have. Suppose we have a new part of the size and design shown in Fig. 7 and suppose our designer had been able to calculate the stresses to which the part is to be subjected. Let us assume that the maximum stress to which the shaft will be subjected at the section of location 3 in Fig. 7 to 150,000 pounds per square inch arising from the combined torsional and bending loads but that this maximum stress is only occasional and the usual fatigue load is 25,000 pounds per square inch. In order to minimize distortion it is desired to quench in oil.

Choice of steel and heat treatment of such a shaft would require that it make as many reversals of stress at 150,000 pounds per square inch without failure as it is apt to receive in the service life of the shaft. It will be observed by reference to Fig. 1 that if the part is finish ground it will withstand about 10,000 load applications of 150,000 pounds per square inch and if the shaft is in the as forged condition it would withstand about 3000 load applications.

If in the opinion of the experienced engineer 3000 load applications is in excess of what will be encountered in the service life of the part the shaft may be used in the as forged condition. If the shaft may have more than 3000 but less than about 10,000 load applications the part may be ground. If the part will have more than 10,000 applications of load higher hardness is indicated. Of course, if the surface is in the as forged condition, another possibility would be to shot peen the surface.

Let us assume that the number of load applications is under 3000 and that the minimum hardness of rockwell C 39 is then satisfactory. Since the stress of 150,000 pounds per square inch is at the surface, and is only 102,500 pounds per square inch at the three-quarter radius distance, it will be necessary to have 90 per cent martensite for only the distance from the surface to the three quarter radius position on the 1-7/16-inch round section. This means from Fig. 7 that a minimum hardenability of the steel chosen would be 11/32-inch

Always Busy!

MICHIGAN

SAVES HOURS EVERY DAY *for*

PISTON AND PIN MANUFACTURER

Before this nationally-known automotive parts manufacturer put a fully convertible MICHIGAN TLDT-20 CRANE on the job, handling of limestone, sand, coke, and scrap was consuming too much time — costs were running too high.

Now that these operations, and more too, are done with this MICHIGAN, things run smoothly on schedule and these handling costs are 'way down. As this satisfied owner said, the longer you own a MICHIGAN, the more you'll find to keep it always busy saving time and cutting costs.

Get the Facts

about the complete line of

MICHIGAN Mobile Cranes

6 to 12 ton capacities

Easily convertible to clamshell, magnet crane, dragline.

MICHIGAN

MICHIGAN POWER SHOVEL COMPANY

392 SECOND STREET • BENTON HARBOR, MICHIGAN, U.S.A.

It is also desirable to choose a steel whose carbon content will give a hardness of rockwell C 50 or more when 90 per cent martensite is obtained since it is desirable to have a reasonable tempering temperature.

From an examination of the hardenability bands in the AISI manual it will be noted that steel 8650 H has a minimum hardenability of 11/32-inch with a hardness of rockwell C 53. Steel 8650 H has a minimum carbon, including allowance for permissible variation of 0.44 per cent. A 0.44 per cent carbon steel has a hardness of C 53 when its structure consists of 90 per cent martensite. We have thus found that 8650 H steel when its hardenability is the lowest acceptable under the standard specification will give a structure of 90 per cent martensite to a depth of one-quarter of the radius on the axle shaft, and so is entirely suitable for this part.

If SAE 8650 is not obtainable or acceptable for reasons other than hardenability considerations, other steels may be found which will give the proper hardenability and properties in our original assumption by applying the same reasoning. If only one tenth of the radius needs to be hardened SAE 5145 could be used.

Purchasing Specifications—Another consideration for those applying the principles of hardenability are the specifications within which standard steel can be furnished. If we review the hardenability bands according to which steel may be purchased, we find rather wide limits have been adopted as standard.

If it is desired to harden a steel bar through to the center with so small a size as 0.5-inch round, it is necessary to use SAE 8740 steel or steel of higher hardenability. It is seldom necessary to harden steel to the center, and as stated previously in this article, quite frequently hardening to the three quarter radius and even less is sufficient.

A matter which many metallurgists are attempting to decide today is whether to purchase steel on the basis of chemical composition or on the basis of hardenability bands with somewhat widened chemical limits. Will the spread in hardenability be wider if we purchase on the basis of chemical composition or on the basis of hardenability bands? To show the minimum size which would harden to a depth of one quarter of the radius to rockwell C 50, bar sizes have been calculated on the basis of lowest chemical composition and are shown on the right side of Fig. 8. It is rather interesting to note that in several instances the lowest hardenability that could be obtained with minimum chemical composition are the same as the guaranteed minimum when purchasing according to hardenability bands.

Bands calculated for low chemical composition are based on the lowest possible quantity of each element, except sulphur, that can be present in the composition allowing for the permissible variations below the specified ranges. It is assumed that this range would be accompanied by a No. 8 grain size. It would be rare indeed if all of the elements were on the low side as indicated so that it should be seldom that steel purchased on the chemical range basis would have as low a hardenability as that shown in Fig. 8, assuming of course that our formulas for hardenability calculations are correct.

It may be the conclusion of some metallurgists that very little is gained on the low side of hardenability for several of the steels by purchasing according to hardenability bands, especially since the low side of hardenability is usually the most important side. As already indicated in this paper it is possible to have quite a wide variation in hardenability from the average which is obtained by calculation. It appears, therefore, that purchase according to hardenability bands would eliminate those heats which are lower in hardenability than the calculated average.

Consequently an advantage is gained on the low side of hardenability by purchasing according to the hardenability bands, although in some cases this advantage is rather small. For the steels SAE 1340, 4640 and 8640 the hardenability bands are very definitely higher at the minimum than the calculated values. In practically all cases the hardenability on the high side is lower using hardenability bands than chemical specifications. This again shows an advantage for purchasing according to hardenability bands. If it is possible for the steel producers to further narrow the bands it would be an advantage to have the low side brought up, and it appears from the calculation that this might be quite possible.

If it is decided to obtain hardenability at the lowest cost for any given series of medium carbon alloy steels it will be found that the greatest hardenability per unit of cost is obtained with the highest carbon content. The criterion of hardenability in each case is the size which will harden with a minimum of 90 per cent martensite to a depth of one quarter the radius. Hardenability may be increased from 0.4-inch round to 1.9-inch round merely by increasing the carbon from 0.17 per cent to 0.53 per cent. There is no increase in cost between these steels. Of course, there are usually more fabrication difficulties with the higher carbon steels. Forging, annealing, and machining in general are more difficult with higher carbon steel and the additional cost of these operations must be balanced against the savings of original steel cost.

From data presented by the author at the SAE annual meeting, Detroit, Jan. 12, 1948 tech 1351

REFERENCES

1. Trans. Am. Soc. for Steel Treating, Vol. 2, p. 206, 1921
2. G. C. Noll and M. A. Erickson, preprint for annual fall meeting of Society for Experimental Stress analysis, Dec. 1947
3. J. H. Hollomon, L. D. Jaffe et. al. Am. Soc. for Metals, Vol. 38, p. 807, 1947
4. Obtained from H. E. Hostetter of Climax Molybdenum Corp. by private correspondence
5. STEEL, Vol. 113, p.122, Dec. 13, 1943
6. *Metals & Alloys*, Vol. 10, p. 183, June, 1939
7. Soc. of Automotive Eng., Vol. 52, p. 472, Oct., 1944

Electric Crane Traction Covered in New Text

Covering selection of electric motors for cranes a new volume, "Electric Traction for Cranes", by Richard A. West is being offered by Pitman Publishing Corp., New York. Printed in England the book covers mechanical and electrical particulars necessary for making a recommendation of horsepower and geared speed.

Contained in the 84 page volume are 42 graphs dealing with the factors to be considered in motor selection. Examples of motor selection for long travel drives are included in the last chapter. Among subjects discussed are: Alternating and direct current supplies and drives, friction, speed, power requirements and control gear.

Aluminum Processing Motion Picture Released

Showing the production of aluminum from raw bauxite to finished products, a 16 mm motion picture, "Pigs and Progress", has been recently released by Reynolds Metals Co., Louisville. In full color, it has a commentary by Andre Baruch which explains each of the scenes and processes in simple, everyday language.

Some of the scenes shown include the conversion of bauxite into alumina, electrolytic reduction of alumina to produce metallic aluminum and mill operations involved in converting aluminum ingot into such forms as sheet, plate, rod, bar, rolled and extruded shapes. Picture is available for showing to interested groups.

Future SCRAP NEEDS to be Even Greater

Get In Scrap Metal, Plea to Auto Workers

Two automobile manufacturing firms Wednesday appealed to their dealers and employes to aid the production of automobiles by turning in scrap metal.

C. E. Wilson, president of the General Motors Corp., said that unless the flow of scrap to steel mills is increased, 1948 automotive production will suffer. He called on all G-M employes, dealers and plant managers to join the drive. The Packard Motor Car Co. has asked its dealers in 12 zones, including Milwaukee, to earn additional allotments of new cars by accumulating scrap.

As explained to GM's 365,000 employes 15,000 dealers and others, the purpose of the drive is "to get every pound of scrap metal out of the homes, farms, factories and other business places and into the steel mill furnaces as rapidly as possible. "Scrap metal is one of our most critical shortages," Wilson said in a message to employes. "The lack of it held production down in 1947.

"Scrap metal drives were one of the greatest contributions made by civilians during the war to keep our wartime steel output up. Today, the economic importance of getting the scrap iron and steel into the mills is as great as the patriotic motives were during the war."

The General Motors president asked employes to use the regular collection agencies to get scrap metal flowing toward the mills, and added:

"The steel industry in this country requires 35 to 50 tons of scrap to produce 100 tons of finished steel. The present shortage of scrap arises from the fact that 100 million tons of steel went into making war supplies and lend-lease materials for our allies. This is the equivalent of three years' scrap needs of the steel industry. Very little of this steel has come back into the United States scrap market."

New York, N. Y.—(AP)—The steel industry must find additional scrap if it is to utilize the newly increased steel capacity, Iron Age, national metalworking weekly, said Wednesday. The publication added that scrap is more difficult to obtain today in large amounts than at any time in history.

The newspaper clipping reproduced above tells the story of the continued scrap shortage which faces American Industry.

Today's expanding economy is faced with growing shortages of iron, steel and other needed metals. Expanded capacity of mills, smelters and foundries is only part of the answer.

They cannot produce at full capacity without more usable scrap metal. Increased use of baled sheet metal scrap can help take up the "slack" in the scrap cycle . . . not only now, but in the years ahead.

If you are *not* baling your *sheet metal scrap* . . . plan to do so as soon as possible . . . to help provide your own supply of new metal in the future. There's a Galland-Henning Hydraulic Baler of proper size and capacity to meet your future baling needs. The important thing is to plan for it now. Write —

GALLAND-HENNING MFG. CO.

2747 SOUTH 31st STREET • MILWAUKEE 7, WISCONSIN

GALLAND-HENNING

SCRAP METAL BALING PRESSES

A 5376-1P

By G. ELDRIDGE STEDMAN

Former Wasteland Now

Western Steelmaking Enterprise

Integrated steel plant at Geneva, Utah, under direction of Dr. Walther Methesius, employs elements found within mountain area. Additions to plate mill will afford production of light-gage flat rolled stock for conversion to cold strip at West Coast plants

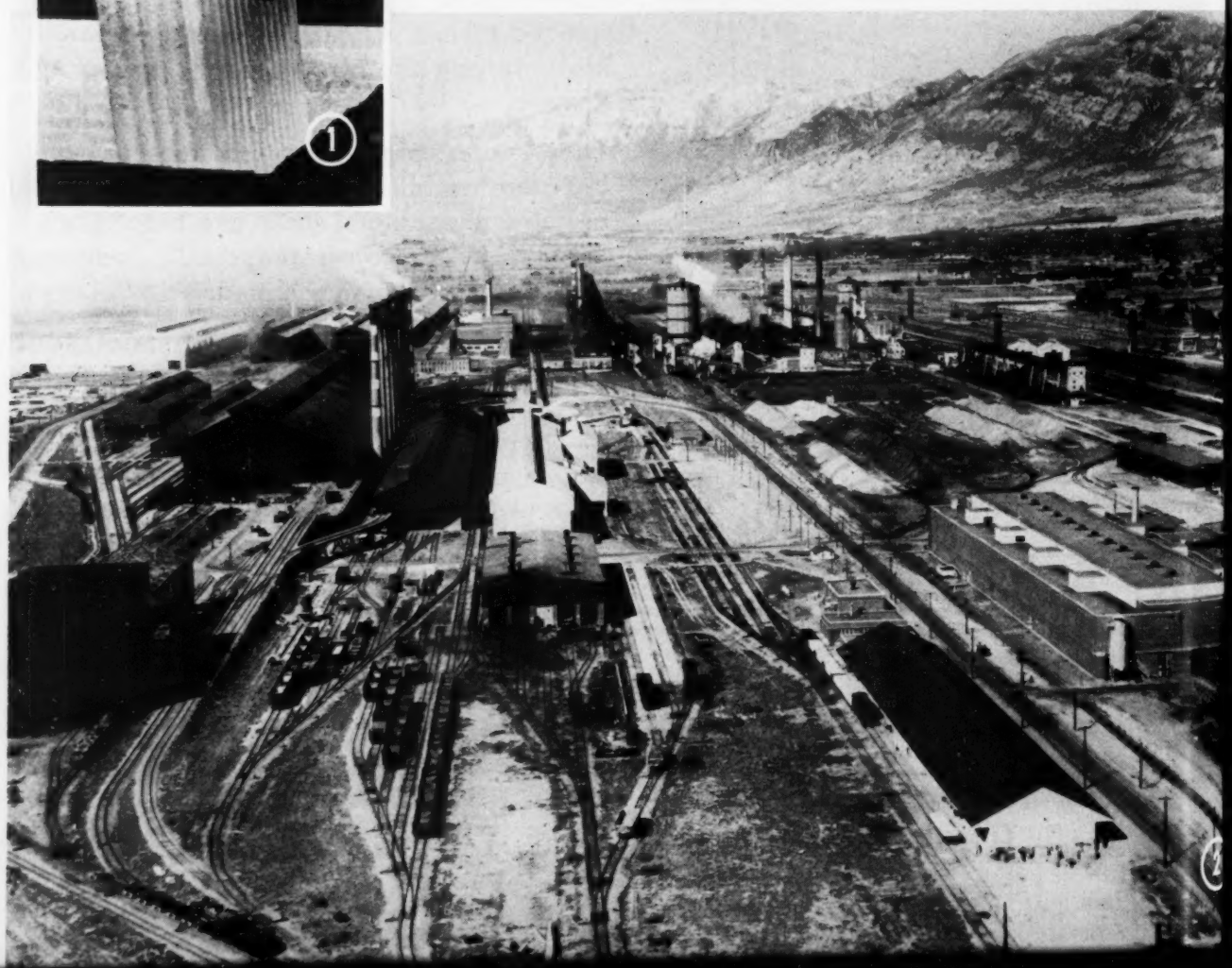
DURING World War II, the U. S. Steel Corp. through its subsidiaries, Columbia Steel Co. and Geneva Steel Co., built and operated the Geneva steel plant in Utah for the government, without any fee, commission or charge.

An engineer's dream, 40 miles from Salt Lake City, Utah, on a barren valley waste turned verdant by the industry of Brigham Young and his followers, on the exact spot of the pioneers' first battle with the Piute Indians, in the shade of Wasatch range peaks, this largest integrated steel plant west of the Mississippi was erected in 22 months. With a rated yearly capacity of 1,150,000 tons of pig iron, 1,283,400 tons of steel ingots—in the ensuing 18 months before war's end, it produced 634,010 tons of plate and 140,706 tons of structural shapes and shell steel billets. This is a conspicuous example of the unconquerable abilities of our capitalistic system to react positively and unselfishly in the common good whenever there is serious threat to national affairs.

The end is not yet. For the Geneva achievement is now speedily turn-

Fig. 1—Slabbing ingot being hoisted from soaking pit

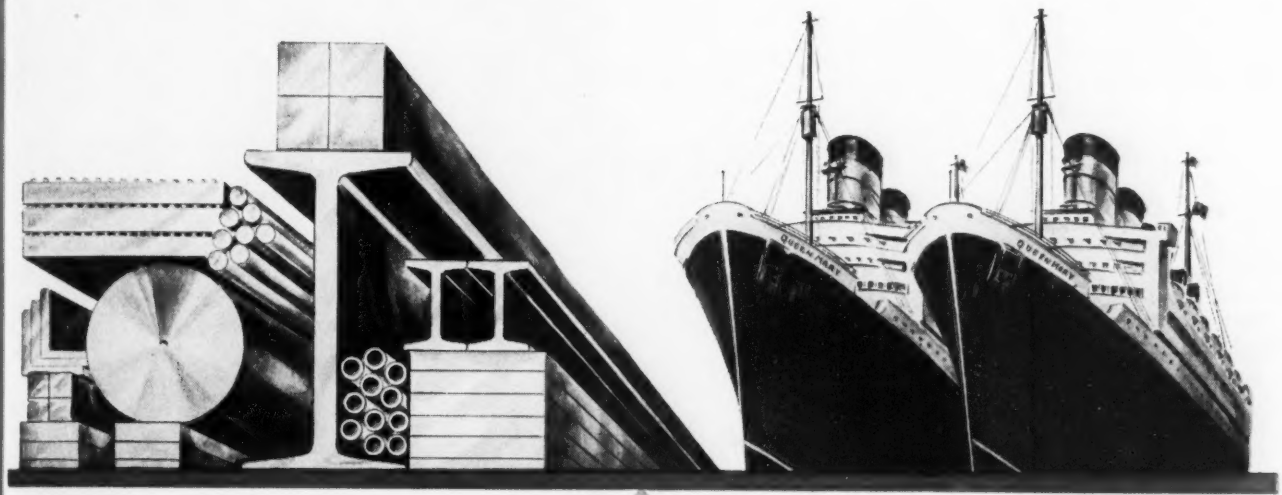
Fig. 2—Geneva Steel Co.'s plant near Provo, Utah, with Utah valley and Wasatch mountains in background



B&W JUNIOR FIREBRICK

help increase steel output by

162,000 tons



More than TWICE *the weight of the* QUEEN MARY!

Production figures show that remarkable savings are being realized through the use of B&W Junior Firebrick.

For example, the first quality firebrick in the suspended roof of a continuous reheating furnace had to be replaced after heating every 45,000 tons of steel. But—when the roof was rebuilt with *B&W Junior Firebrick*, 207,000 tons were run through without shut-down for repairs! And, at the end of the run, the roof was thin but otherwise in good condition.

B&W Junior Firebrick help you increase output and reduce costs by reducing the refractory replacement rate and by eliminating frequent furnace outages. Your local B&W Refractories Engineer will be glad to discuss your refractories problems.

R-304

B&W REFRACTORIES PRODUCTS

B&W 80 FIREBRICK • B&W JUNIOR FIREBRICK
B&W 80 GLASS TANK BLOCKS • B&W INSULATING FIREBRICK
B&W REFRACTORY CASTABLES, PLASTICS AND MORTARS

OTHER B&W PRODUCTS

Stationary & Marine Boilers and Component Equipment
Chemical Recovery Units . . . Seamless & Welded Tubes . . . Pulverizers
Fuel Burning Equipment . . . Pressure Vessels . . . Alloy Castings

BABCOCK & WILCOX

THE BABCOCK & WILCOX CO.
REFRACTORIES DIVISION
GENERAL OFFICES: 85 LIBERTY ST., NEW YORK 6, N.Y.
WORKS: AUGUSTA, GA.

Fig. 3—Columbia Iron Mining Co.'s open pit ore operation at Cedar City, Utah—250 miles from plant

ing into useful peacetime production in the public interest, destined to be a decisive factor in the industrial expansion of the West. Constructive things are happening there.

On June 19, 1946, U. S. Steel acquired the complete Geneva Steel Plant facilities and inventories, including the Keigley stone quarries near Payson, and the Geneva Coal Mine at Horse Canyon for $47,500,000 in cash and the pledge to invest not less than $18,600,000 in further conversion, particularly to add equipment capable of an annual production of 386,000 tons of hot rolled strip, a collateral necessity being the expansion of facilities by the Columbia Steel Co., Pittsburg, Calif., involving a modern cold reduction sheet and tin plate mill, the latter being now in progress. Since then, Columbia Steel Co. announced it will erect another cold reduction sheet mill in the Los Angeles area at a cost of about $30,000,000. This mill will receive approximately 300,000 tons of hot-rolled coils from Geneva. All told, then, the U. S. Steel total cost of this venture is around $120,000,000. This has energized new iron and steel consuming programs now in varied stages of planning or construction, the list of which is already impressive, involving assured additions of fabrication and production in the West of such items as plumbing, structural, plate and sheet fabrication, trucks, containers, machinery, appliances, tubing and passenger cars. Since the West Coast States consume more steel than they produce, and population increases are already phenomenal, the construction of new and enlarged Western plants is becoming a management enthusiasm. With the lurking interest in mountain production locations as a protection against atomic bomb threats, the advancing iron and steel production at Geneva can be expected to spark a considerable industrial growth.

Fig. 4—A 225-ton heat being tapped from one of the nine open hearths

Gus P. Backman, executive secretary, Salt Lake Chamber of Commerce, an able economist, states that within recent weeks nearly a score of the country's top firms had sent personal representatives into the area to investigate the feasibility of setting up manufacturing establishments there. The entire directorate of U. S. Steel made a western inspection tour in September, 1946, and received profound evidence of public enthusiasm towards this move; public appreciation having been increased by the tone of remarks by directors on this visit, typified by that of Irving S. Olds, chairman, who said, "We are most anxious to conduct ourselves as good citizens of Utah and generally to manage our affairs (at Geneva) so as to advance the best interests of Utah and the West."

The people of these parts consider this enterprise to be of, by and for the West. And the advantages have been immediate, to add to their appreciation, for Geneva has been named a basing point for plates and structurals purchased at the Geneva plant since its acquisition by U. S. Steel Corp., with the announcement on Oct. 14, 1946 of a price base of $56 per net ton for steel plates and $53 for structural shapes. This reflects such typical price reductions per net ton for delivery within the Intermountain areas as: Salt Lake City, $16.16; Ogden, $15.54; Boise, $9.36; Spokane, $7.30. Further benefits are gained from freight rate reductions to numerous destinations; Geneva to San Francisco and Los Angeles was reduced from $14 to $9.60 per ton, effective April 1, 1947. The combined effect has benefited most West Coast buyers by over $5 per ton on structural shapes and $3 for plates.

Dr. Walther Mathesius, whose genius as a technician and operator is unsurpassed in the steel industry, is president of Geneva Steel Co. Thoroughly apprenticed in blast furnace and coke plant, foundry and forge shops, after his initial schooling at Hoerde and Dortmund, Westphalia, he graduated from Berlin's Institute of Technology with high honors as a master of science and doctor of engineering in 1911 and, coming here to make his home, started employment in U. S. Steel's sub-

* The wedge is the world's simplest and strongest mechanical device.

the * wedge begets

the only cutter with immovable blades

All O K MILLING CUTTERS and MULTIPLE OPERATION TOOLS consist of just TWO components—the BODY and the BLADES. This revolutionary idea was the conception of a practical toolmaker, a man endowed with the genius of simplicity. A block of steel forged into the shape of a wedge became the blade, with one side smooth, the other serrated. Blade slots in the body were tapered and serrated to match. This prevented tipping and permitted close adjustment to compensate for wear. The locking principle makes blades immovable during a cut and replaceable with minimum downtime. No pins, screws, gibs or extraneous locking devices are needed.

Write for new catalog 13.

the OK Tool Company, inc.

52 HULL STREET, SHELTON, CONNECTICUT

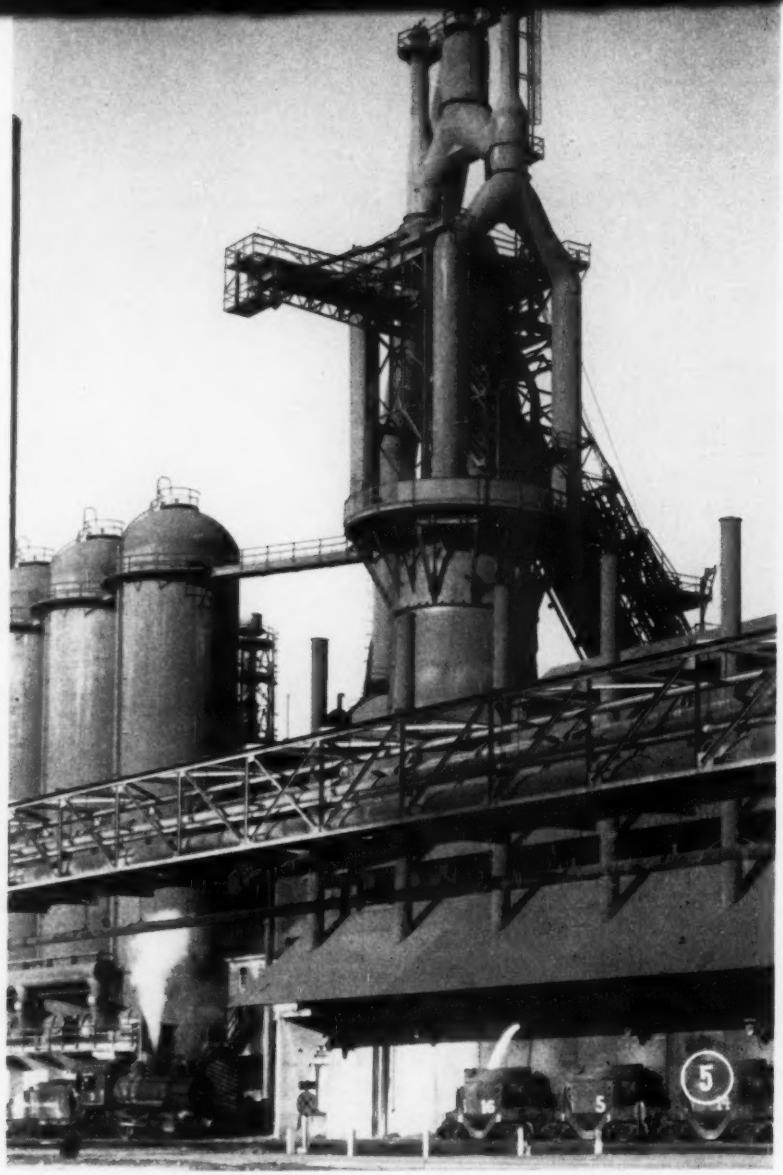


Fig. 5—Casting one of the three 1100-ton blast furnaces

sidiary, American Steel & Wire Co., Worcester, Mass. Then began an unbroken chain of advancements until he became manager of operations, Chicago District, Carnegie-Illinois Steel Corp. in 1935. He is widely recognized as an authority on blast furnace operation and construction, raw material preparation and steel quality control. His technical papers have appeared widely. In 1938 he was given the staff position of vice president, operations, U. S. Steel Corp. of Delaware. Elected president of Geneva Steel Co. in 1943, he has been responsible to a large degree for its notable record since. Because of his achievements in metallurgy and blast furnace practice, and of his personal contribution to the achievement of uniformity in iron and steel, he received the Franklin Institute's Clamer Medal in 1944. His technical skills have sparkled at Geneva in its establishment of the highest American hot-metal proportion in open-hearth furnace practice and in its induction and control of additives and improvements in mining and coking practices to produce a suitable grade of metallurgical coke from the marginal coking coals available.

Intensive exploration has been accomplished and within the little time of Geneva's operation, most of the elements of steel manufacture have been found within the surrounding mountain area, such as manganiferous ore, fluorspar, clay, sand of three varieties in addition to iron ore, stone, silica brick, and coal.

Blast furnace and open-hearth limestone from the company's Keigley quarry, worked from several strata varying in magnesia, silica and lime content, is sucessfully blended at the quarry. Manganiferous ore and phosphate rock are stocked and reclaimed, providing a quasi-bedding operation. C. L. Waggoner, general plant superintendent, states that the single grade of iron ore, as mined, varies between 20 and 78 per cent magnetite but by mixing from several faces these wide fluctuations are brought within 25 to 45 per cent range. The ore bedding preparation at Geneva reduces magnetite variations in 12,000 T-bedded piles to approximately 4 per cent. The single grade ore varies in silica, magnesia, alumina and hematite or magnetite, but the bedding system levels these satisfactorily. Since no highly siliceous blending ore is readily available, the additive is by gravel or other siliceous material. The ore is hard, ranging from fines to 2½ inches after crushing at the mines.

In the older days, Mr. Waggoner states, Connellsville beehive coke was the standard to which American coke producers and blast furnace operators worked. However, with the advent of by-product coke ovens at the steel plant, blending of two or more coals to duplicate or improve upon Connellsville standards became the usual practice. In Utah, however, the problem has differed in that there has been no blending selection and all of the coal is high volatile. Our coal, he pointed out, is generally a relatively young bituminous coal with marginal coking properties.

Dr. Mathesius mentioned that Geneva's No. 1 technical problem had been one of learning how to make coke from the coal at hand, and that has been one of Geneva's accomplishments. The coal, as explained by C. L. Waggoner, is more a coking coal than one particularly capable of producing a strong metallurgical coke. It contains approximately 9 per cent oxygen. However, a suitable coke has been made from it. Part of the solution has been in selective mining. Then the coking practice is different, in that, without the possibilities of blended coal, good metallurgical coke is achieved through the addition of coal tar pitch and substantially higher than customary oven temperatures.

Total coke yield is about 65 per cent from the coal as charged. The Geneva mine, 120 miles southeast of Geneva, is part of a horseshoe cliff structure with seams from 6 to 14 feet on the mine side, the dip there approximating 12 per cent. Better quality coke is produced from coal farther away from outcrop, and development has been in that direction. The dip is such that as the miners proceed in from the outcrop, height and thickness of overburden is increased. Operations to date indicate that as they mine down the slope to greater depth, coal will continue to improve in coking quality. Presently mining is in the Sunnyside Seam, a 14 foot seam with no gas or water hazards, ideal from the mining standpoint, and operations are completely mechanized.

Because of the urgencies of war

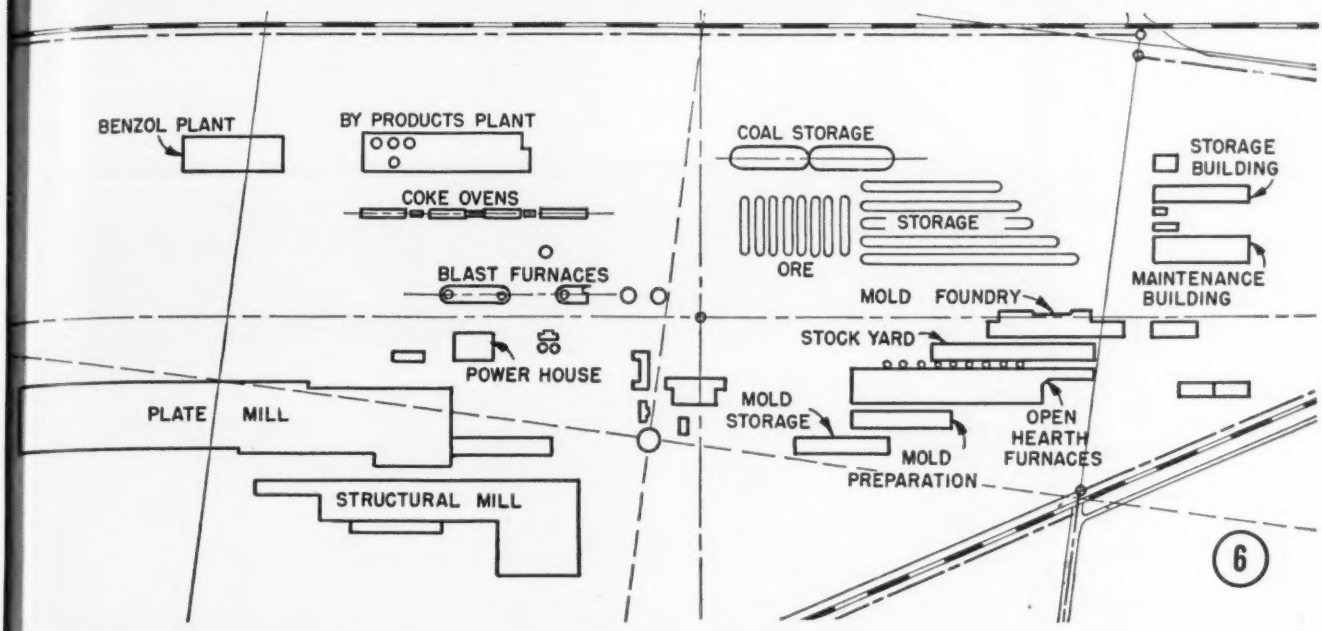


Fig. 6—Layout of Geneva steel plant comprises 1502 acres including reservoir

production, the poorer coking coal had to be used and it required 2346 pounds gross coke to produce a net ton of iron, or 4651 pounds of coal. A series of experiments indicated that an increase in oven temperatures, changes in coal pulverizing practice and additives of pitch (presently 3 per cent) would improve blast furnace coke yields and coke quality. Presently, therefore, Geneva is producing 1 net ton of pig iron per 2900 pounds of coal, an improvement of 37 per cent. Blast furnaces are now operating at 1000 tons per 24 hours, at a net coke rate of 1600 to 1700 pounds per ton of iron. A constant dissatisfaction with existing practices as a continuous stimulation towards better technical practice, is a distinguishing characteristic of the Mathesius operating philosophy. He is known for the constancy of his improvements.

The Geneva mine is currently producing 4500 tons of coal per day, about 25 per cent less than the desired output. Hindrances are shortage of railroad cars and insufficient homes for miners. These are being corrected, Dr. Mathesius explained. We have no desire, he stated, to boast of our as-yet rather brief record in steel production for peacetime use, yet we believe it is reasonable to say that the operation of Geneva under U. S. Steel ownership has actually begun to prove its ability to make a commendable contribution towards the best interests of the West.

The Geneva plant site covers 1500 acres, served by the Denver & Rio Grande Western R.R. and the Union Pacific, which switch into one general plant yard, there being 73 miles of track within plant site. The coal at the coke plant is dumped from cars by Link Belt rotary railroad car dumper to belt conveyors. There is a 75,000 net ton coal storage yard, and a 1005-foot reclaiming tunnel beneath this storage; two Pennsylvania center feed hammer mills with a pulverizing capacity of 350 net tons per hour. Two 2500 net ton storage bins are maintained at the coke ovens.

The coke plant comprises four batteries of 63 Becker underjet ovens each. They have a capacity per oven of 14.4 net tons of coal, a 4-battery carbonizing capacity of 4838 net tons coal/day, with a coking time of 18 hours. Two of the batteries operate with coke oven gas, the other two with blast furnace gas enriched to a 105 Btu/cubic foot mixture. Coke oven gas, tar, ammonium sulphate, sodium phenolate, 2-degree benzol, 1-degree toluol, xylol and solvent naphtha are by-products separately produced.

A rotary car dumper facilitates handling of ore which moves by belt conveyor into eight ore beds with a total storage of 116,000 net tons served by two double-wing stackers and two reclaiming machines. Flue dust is reclaimed by two sintering machines having a 900,000 net tons/year capacity.

Three blast furnaces have a 1,150,000 net ton combined pig iron/year capacity; single furnace output is 1120 net tons per day. Each furnace has a 25-foot diameter hearth, 27 feet 2 inches diameter bosh, 93 feet height with 35,627 cubic feet capacity.

Molds for the two-strand pig casting machine are for 40 pound pigs.

The open-hearth shop has nine basic furnaces of 225 net tons capacity each. These are fired by coke oven gas and tar or fuel oil, each being equipped with a waste-heat boiler. Two 800 net ton hot metal mixers serve the shop. Open-hearth capacity is 1,283,400 net tons of steel/year, or 3516 net tons per day.

The steelmaking department depends upon the blast furnaces for metallics charging from 70 to 75 per cent hot metal. The nearest precedent for this practice, as far as is known, is at the Broken Hill Proprietary Co., Ltd. plant in Australia. This high iron practice greatly assists in freedom from contamination by tramp alloys.

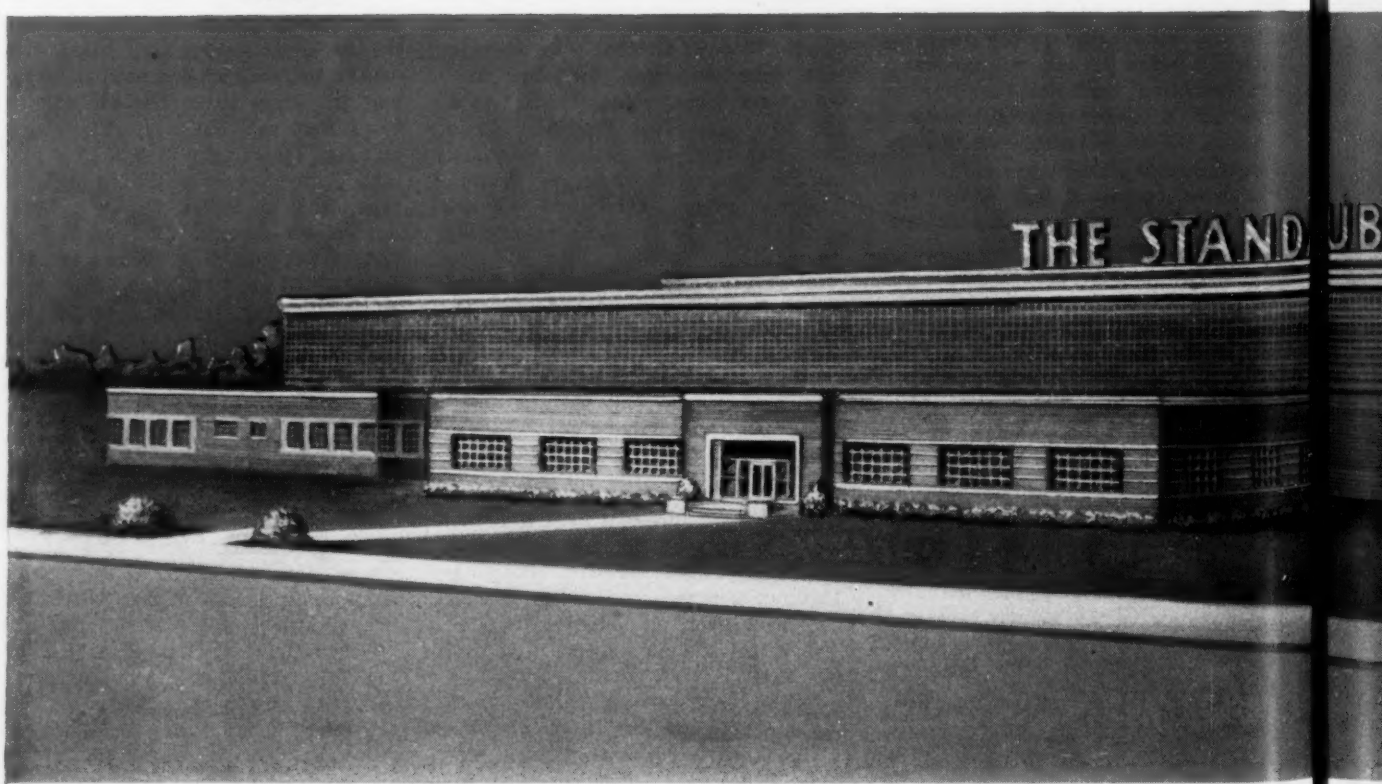
Rolling mills are served by 12 recuperator-type soaking pits, each of the six units having two holes with central bottom burners, fired one way, and an "ingot to be heated" capacity of 3516 net tons/day. The single slab and blooming mill is a 45 x 115-inch United reversing 2-high high-lift type, and is driven by twin 5000-horsepower motors. Slab capacity is 858,500 net tons/year, blooms and billets 220,000 net tons/year. The three slab reheating furnaces of 78 net tons/hour capacity each, use coke oven gas, though fuel oil standby equipment is available.

Rolling facilities also include a Mesta 132-inch semicontinuous 4-high plate mill consisting of a 4-high spreading stand, a 4-high reversing rougher and four continuous 4-high finishing stands. The 7000 horsepower motor which drives the reversing rougher is the largest of its kind ever built by General Electric Co.

Serving the structural mill there are three triple-fired continuous bloom reheating furnaces with a 50 net ton/hour capacity each, fired by coke oven gas, with oil standby.

The structural mill has one 32-inch

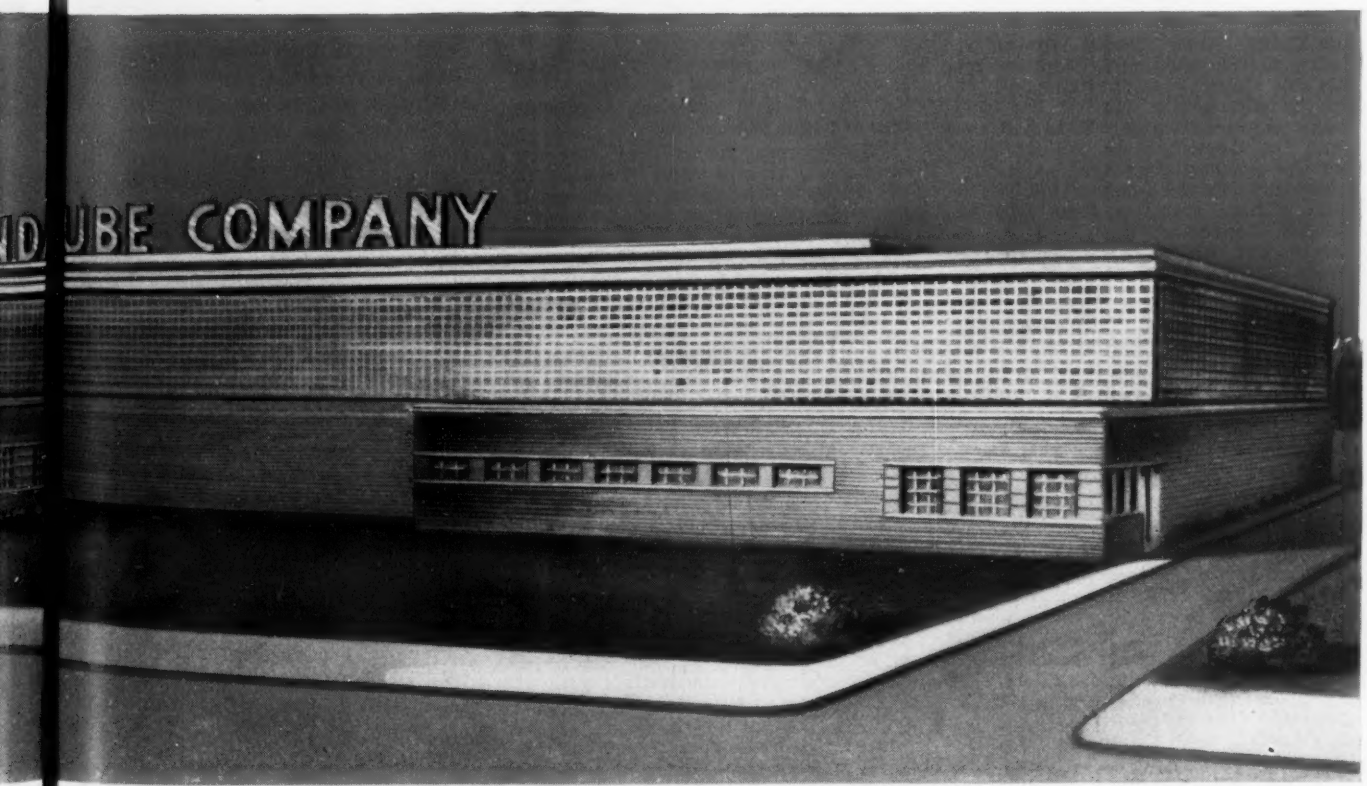
The Standard Tube Company



It is a pleasure indeed, to introduce you to this fine new modern home of the Standard Tube Company, Detroit, Michigan. We are justly proud of the tremendous future potential offered by this tailor-made tubing plant. Planned as it is, to fit the requirements of the Standard Tube Company, it is designed wholly to fit the needs, present and future, of the production of welded tubing. Reversing the procedure of fitting production to the plant to one of building the plant to fit production—we have planned every inch of floor space to more efficiently handle our expected volume. In so doing, it is our aim to maintain "Standard" quality, eliminate manufacturing waste, and thereby to increase production potential. This new plant makes it possible for us to more efficiently service the ever growing list of manufacturers who "Standardize with Standard" for all of their electric welded tubing needs.

Stanley L. Willis
PRESIDENT

24400 PLYMOUTH ROAD, DETROIT 28 • PHONE KENWOOD 1-9300



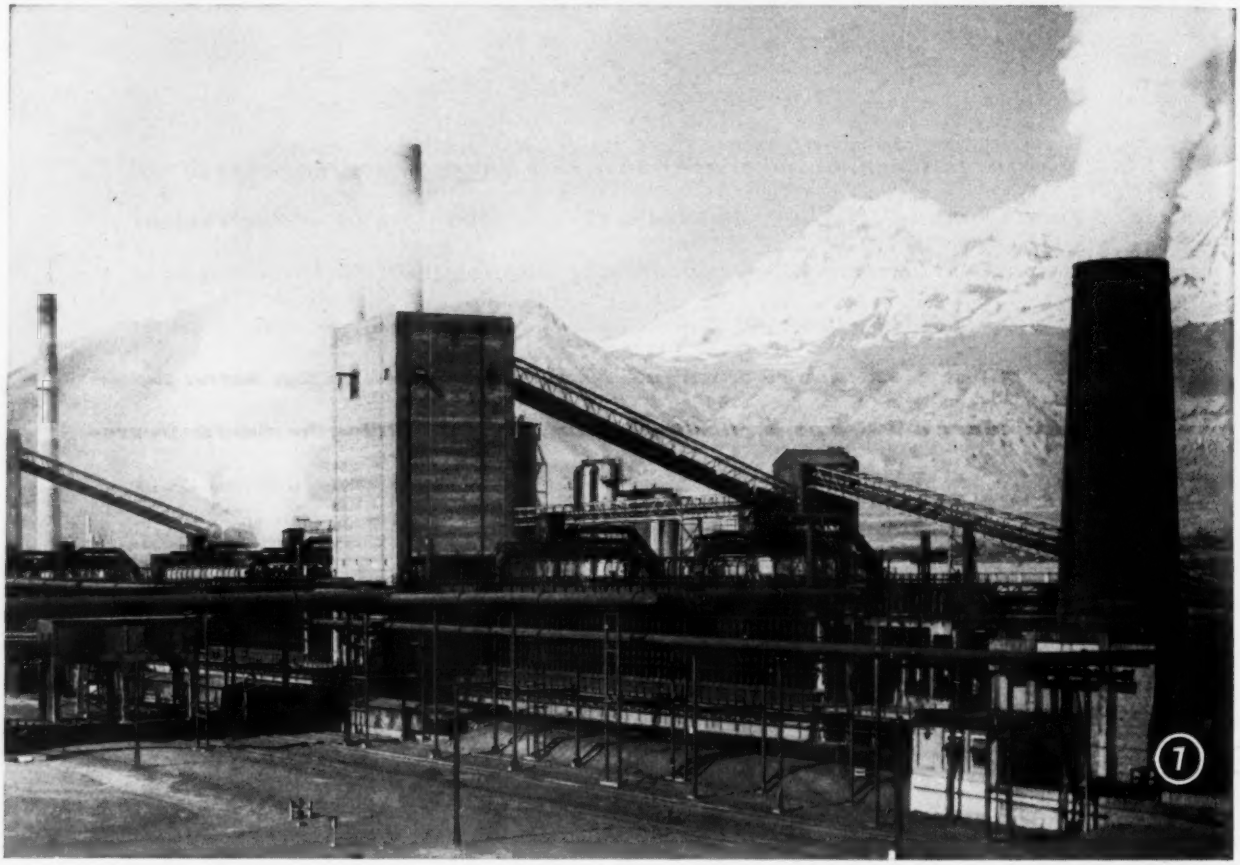


Fig. 7—Coke ovens which serve the Geneva plant comprise four batteries of 63 underjet ovens

2-high Birdsboro reversing mill and a 3-stand 26-inch Morgan finishing train with an expected annual production of 200,000 net tons.

"At the time it acquired this plant," Dr. Mathesius said, "U. S. Steel Corporation announced not less than $18,600,000 would be spent at Geneva to convert the plant facilities to peacetime uses. Orders for the required machinery were placed promptly. Some of this equipment has now begun to arrive at Geneva, where it will be installed as part of the first major conversion step. This will expand the Geneva plate mill to permit the production of light gage flat-rolled steel in the form of hot rolled coils. These coils, in turn, will be further converted into cold rolled sheets and tin plate, to serve the needs of the country west of the Rocky Mountains.

"A modern cold reduction mill, which will use an estimated 386,000 tons annually of these coils is nearing completion by Columbia Steel Co., Pittsburg, Calif., and another cold reduction sheet mill of 300,000 tons annual capacity is about to be erected by Columbia Steel Co. near Los Angeles.

"Operations at Geneva are proceeding at a good rate in spite of various difficulties," Dr. Mathesius continued. "Steel ingot production is currently running at the rate of 85,000 to 90,000 tons per month. From these ingots, over 50,000 tons of steel plates; over 11,000 tons of structural shapes and 6000 tons of billets are being manufactured each month. Since the Geneva plant was acquired on June 19, 1946, shipments of products from Geneva up to Oct. 31, 1947 have been as follows:

Products	Net tons
Pig iron	192,292
Plates	556,558
Structural shapes	87,867
Billets and slabs	66,518
Coal chemicals	49,604
Coke products	71,674

"To make possible these shipments, the Geneva plant produced 905,064 net tons of pig iron and 988,515 net tons of steel ingots.

"It was necessary to expand the small standby crew of June, 1946 to a full-fledged operating organization of about 5600 people.

"Considering the general shortage of many kinds of steel products in the face of the presently abnormal demands, these shipments of approximately 903,000 net tons of steel and pig iron during a period of about 16 months mean a great deal to the approximately 1500 primary purchasers of these products, scattered all over the West. We believe it is accurate to say that most of these customers would be classified as 'small business' by any proper standard.

"This valley, once a wasteland, was turned into a fertile area by Mormon industry. This plant is surrounded by some of the most fertile orchard area in the state. They raise fine harvests of fruit and stands of grain in this valley, and steel plant operations are in no way injurious to their pursuits. The people are agricultural. Yet they have been brought into the plant without any former industrial experience and, certainly, without steelmaking experience, and we have made efficient steel workers out of them. Relations with them are good; their industry is appreciated. We are glad to see a wedding of industry-agricultural endeavors. Our schedules are adjusted to give them time to plant and harvest; and a reasonably good man-hour/ton production is being secured. We like them, and we now feel that they like us."

They do. The chamber of commerce at the little town of Pleasant Grove, close to the plant elected Dr. Mathesius as "an honorary citizen."

Patience has been employed to teach these earnest people the art of steelmaking. They have had to acquire many new habits, particularly in safety standards. They would climb over railroad trains, have to be chased down from overhead crane runways at the start, and the accident rate was high. But it is fast improving. Now more than 50 per cent of open-hearth crews are local boys, now as keen steel workers as can be found. Labor conditions are pleasant. There are 4200 employed at the Geneva plant, overall company employment is 5600. Geneva's labor turnover rate was 12 per cent August, 14 per cent September, 9 per cent October, partly reflecting agricultural activities, and summer employment of college students, for which the management has adjusted schedules. Labor-turnover among all other employees (quarry, coal, iron mines) comparatively was 6, 4, and 3 per cent for the respective months.

WHAT HAS ALUMINUM IRRIGATION PIPE GOT TO DO WITH MY PROBLEM?

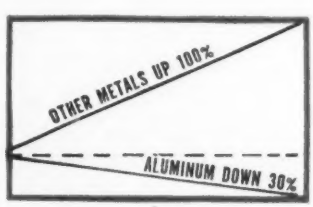
More than you might expect.

New, sprinkler-type irrigation systems made with Reynolds Aluminum are portable because they're lighter. Being portable, less pipe is needed to irrigate wide areas. And the farmer can spot his system to meet requirements.

It proves again that Reynolds Aluminum usually does the job better . . . at lower cost. Just as it does in the case of transportation equipment, where the easy-working, easy-handling qualities of aluminum shapes and sheet have cut costs. Or the host of screw machine products made from free machining Reynolds Aluminum bar stock.

Aluminum's advantages are not reserved for premium products alone. Pound for pound, aluminum gives you three times more usable metal than copper, brass or steel. There is also a saving in every step of your production process because lightweight aluminum handles and works faster. In many cases, its pleasing natural color avoids additional costly finishing. Then, too, every pound saved in the weight of the finished product is reflected in lower shipping costs.

So why not Consider Aluminum—Consult Reynolds. For complete information contact your nearest Reynolds Field Office or write Reynolds Metals Company, 2520 South Third Street, Louisville 1, Ky.



The base price of aluminum has been reduced 30% since Reynolds became a primary producer.

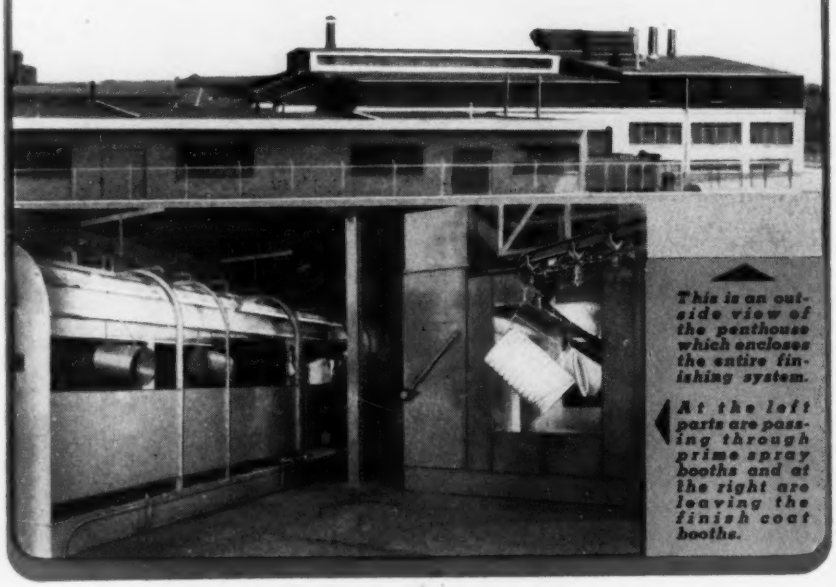
REYNOLDS *Lifetime* ALUMINUM

REYNOLDS MADE ALUMINUM COMPETITIVE — TAKE ADVANTAGE OF IT

NEWCOMB-DETROIT

Engineers — Builds — Installs

PAINT FINISHING SYSTEM IN A PENTHOUSE!. . . .



This is an outside view of the penthouse which encloses the entire finishing system.

At the left parts are passing through prime spray booths and at the right are leaving the finish coat booths.

TO FINISH FAMOUS *Deepfreeze* HOME FREEZERS

To save valuable plant area at Motor Products Corporation's Deepfreeze Division where the famous Deepfreeze Home Freezers are made, Newcomb-Detroit installed the entire finishing system on the roof of the plant. The system includes a spray bonderite system, dry off oven, prime coat booths, prime coat oven, finish coat spray booths, finish coat oven and an air supply system to distribute conditioned air to the booths and ovens. The entire system is serviced by conveyors which are connected to the production departments below.

This is but one of the many Newcomb-Detroit installations which produce fine paint finishes efficiently and economically. During the past 35 years they have designed, built and installed finishing systems of all types in a wide variety of industries. Use this experience to solve *your* finishing problem.

Established 1912

NEWCOMB-DETROIT COMPANY

Grand Rapids Division
GRAND RAPIDS, MICH.

Main Office and Plant
5741 Russell Street
DETROIT 11, MICHIGAN

Western Sales Office
CHICAGO, Ill.

Beryllium Health Hazards Held To Be Exaggerated

Medical reports labelling the beryllium industry with health hazards when actually hazards exist in about four plants using chemical beryllium compounds are held to be an unfair indictment, according to information in a pamphlet published by Beryllium Corp., Reading, Pa. Records of this company and several others which have been using beryllium-copper strip for 10 years or longer show no evidence of the reported toxicity.

Every case of so-called "beryllium poisoning" has occurred either in a beryllium ore reduction plant, a beryllium melting plant or in manufacture of fluorescent lamps. Soluble salts of many metals are poisonous such as mercury, barium, arsenic, silver, copper, lead, etc. Cause of beryllium poisoning in ore reduction and smelting plants is the compound beryllium oxy-fluoride, and in fluorescent lamp manufacture trouble is caused by beryllium oxide in fine dust form entering lungs and reacting there. There is no case record of any poisoning affect from handling of metallic beryllium or beryllium alloys according to the records of leading users.

Attention is invited to the recently conducted "Symposium on Medical Phases of the Beryllium Problem" by Saranac Laboratory, Saranac Lake, N. Y., under direction of Dr. Arthur J. Vorwald. It is suggested that users of beryllium secure a report of this study made by independent experts in order to learn the "truth" about toxicity.

Manganese Steel Parts Keep Conveyors Going

Continuous operation and lower maintenance costs in pig casting machines are made possible by the use of manganese steel parts manufactured by American Manganese Division, American Brake Shoe Co., Chicago Heights, Ill., for elements that must withstand shocks, stresses and abrasion. Chain and rollers of endless conveyors that carry a series of molds to the pouring station are particularly subject to abusive treatment, and manganese steel wheels, chain links and pins demonstrate that costs can be reduced and operating life increased.

Manganese steel has toughness that withstands shocks and stresses and its characteristic surface hardening from cold working gives it remarkable abrasion resistance in such operations.

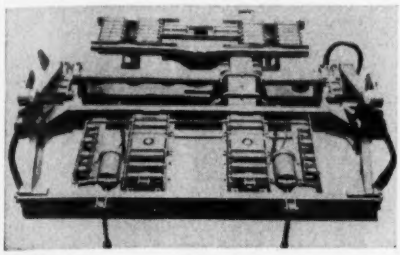
New Products and Equipment

Additional information on the new products and equipment described on this and succeeding pages may be obtained, without obligation, by checking appropriate numbers on the cards following page 158

1. Draw Machine

Announcement of a new design special rollover and draw machine, used when the jarring machine or sand slinger operates separately from the rollover machine, is made by Herman Pneumatic Machine Co., Union Bank Bldg., Pittsburgh, Pa.

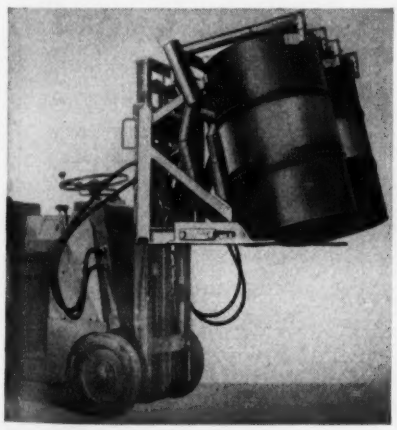
Features included fabricated turnover plate, charging and discharging



conveyor, automatic pattern clamps, chain type flask or core plate clamps and direct acting vibrator. Machines are made for the entire range of rollover machines from 750 to 40,000 pounds capacity, operating on 80-pound air pressure.

2. Drum Handler

Installation of the Drum Master on any hydraulically operated fork truck facilitates the handling of drums, barrels and casks, according to William Ehlers, 408 South Spring St., Los Angeles, Calif., maker of the de-



vice. For straight loading or unloading operation in either box car or truck, a fork truck of 2000 pounds capacity is recommended. The device may be removed in a short time and the forks replaced.

Operation requires two levers. Incorporation of chine clamps in addition to the regular tilting arms has increased the flexibility of the handling device. In operations where chine clamps (used like the hook on a two-wheel barrel truck) alone will serve, the arms may be removed completely. Likewise, clamps may be removed if arms are deemed more satisfactory. Drums may be picked up singly or in pairs and set down anywhere, even in corners.

3. Laboratory Press

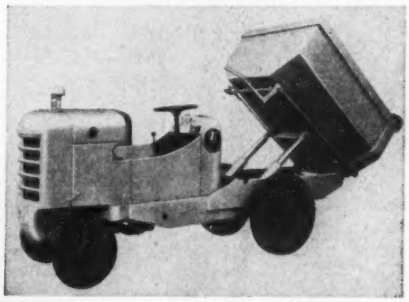
Of 20 tons capacity, the new Smooth-Line hydraluminum laboratory press, made by Hydraulic Press Mfg. Co., Mount Gilead, O., is de-

signed with double acting ram providing pullback pressure for separating molds, dies, etc. Pressing surfaces are 8 x 9 inches, maximum opening between pressing surfaces 14 inches, maximum travel 8 inches and maximum pullback pressure 2-1/2 tons.

A manual operating valve controls directions of travel. Press platen is traversed to work by gravity, the hand pump being required only for building up the desired pressure and returning press plate to original position. It is equipped with a 2-stage hand pump and will hold accurate pressure for long periods. Attachments for various operations are available.

4. Bulk Material Handler

Powered by a gasoline engine, a four-wheeled pneumatic tired hauling unit, the Payloader Buggy, made by

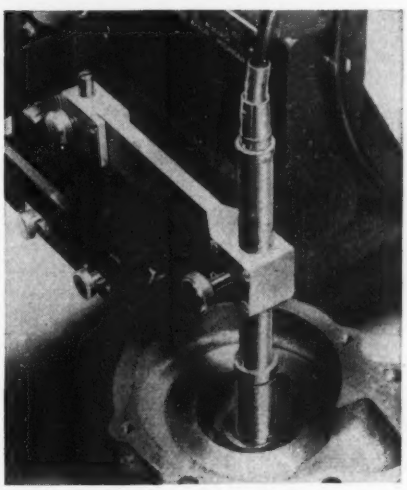


Frank G. Hough Co., 801 Sunnyside Ave., Libertyville, Ill., is designed for low cost, high production movement of bulk materials in and around plants. The 2 cubic yard unit has a hydraulically dumped body, is built low and compactly and has a short wheel base and rear wheel steering.

Overall height is 5 feet 8 inches, allowing operation through low doors. Brakes are hydraulic and body is of steel.

5. Profilometer Tracer

Surface roughness measurements on the bottoms of blind holes and on recessed flats and shoulders may be



taken with the type GA Profilometer tracer, developed by Physicists Research Co., 321 South Main St., Ann

The New
XACTLINE
STRAIGHT LINE
TEMPERATURE CONTROL
For Use With
Pyrometer Controllers

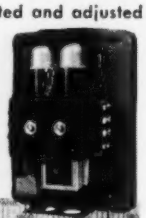
Anticipates
Temperature Change
Eliminates Overshoot
and Undershoot

Now with XACTLINE Straight Line Temperature Control you can increase the efficiency of your Pyrometer Control Instruments (either Millivoltmeter or Potentiometer Type) to an amazing degree. Now you can hold tolerances as close as 1/5°F. plus or minus and power "on-off" cycles as low as 3 seconds.

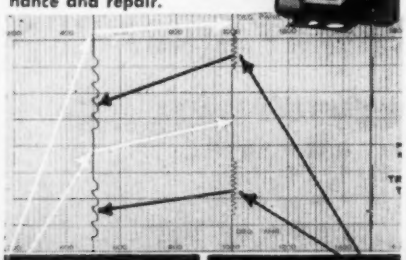
For XACTLINE, operating in the thermocouple circuit, ANTICIPATES the most minute heat variations on both heating and cooling cycles, thereby enabling your pyrometer controller to control far more closely than otherwise possible.

This *Anticipation Factor* means that XACTLINE causes the conventional pyrometer controller to respond to a millivoltage impulse up to 90% less than that normally required, (the controlling pyrometer functions *only* when the desired temperature range has *already been exceeded*).

XACTLINE is laboratory tested and adjusted . . . does not require readjustment or coordination with other controllers.



NO gears, cams, shafts, bearings or other rotating or sliding parts. Simple design eliminates usual maintenance and repair.



Xactline in Circuit | Pyrometer Only

PRECISE CONTROL FOR . . . Tempering-Drawing . . . Iso-Thermal Quenching . . . Al and Mg Treatment . . . Accurate Heat Treating . . . Sintering . . . Metallic Baths . . . Plastic Molding . . . and other operations . . . Price complete F. O. B. Factory . . . $79.50

Write for the new XACTLINE data folder today!

GORDON SERVICE

CLAUD S. GORDON CO.

Specialists for 33 Years in the Heat Treating and Temperature Control Field

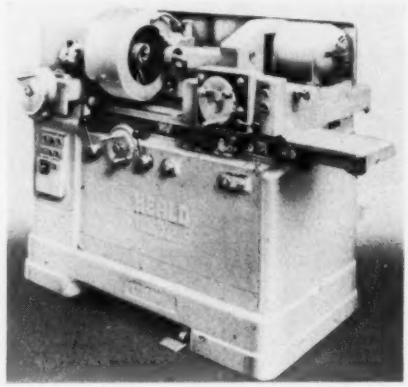
Dept. 14 • 3000 South Wallace St., Chicago 16, Ill.
Dept. 14 • 7016 Euclid Avenue • Cleveland 3, Ohio

Arbor, Mich. It will measure in holes as small as 1 inch in diameter and may be used at any depth to 5-1/2 inches. The diamond tracing point projects from the bottom of the tracer and is self-adjusting to the surface being measured.

Tracer may be used with any Profilometer and is mechanically operated by means of a type A piloting fixture. Accurate measurements on very smooth surfaces of 2 microinches or less may be obtained. It is not recommended for use on surfaces rougher than 100 microinches.

6. Internal Grinder

Designed for rapid and efficient handling of tool room work, the new model 271 internal grinding machine, built by Heald Machine Co., Worcester 6, Mass., features structural rigidity, smooth operating hydraulics with



constant feeds and speeds, isolation of pump and motor units and ring type cylinders with distortion-free mountings.

Machine, equipped with accessible self adjusting brakes, makes possible quick setups with minimum changeover time between jobs being required. It is adaptable to a large variety of parts and a wide range of sizes. The workhead may be swiveled to provide a wide angular capacity for taper work. A sine bar attachment may be applied for high precision settings.

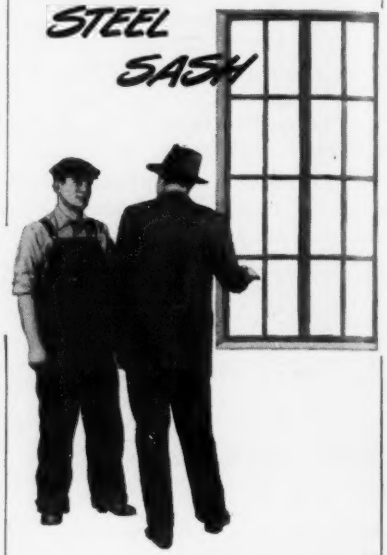
7. Spot Welder

Built with 12, 18 and 24 inch throat depths and with 10 kilovolt-ampere transformer, the type J spot welder, developed by Agnew Electric Co., Milford, Michigan, is of the pivot type and is foot operated. The glass insulated transformer has a very short secondary circuit, resulting in high efficiency. Upper and lower horn mechanism is unit mounted for rigidity.

Both horns are adjustable in and out and can be rotated. The lower horn can be swiveled and reversed

FOR THE UTMOST IN
RUST PREVENTION

HOT-DIP GALVANIZE
STEEL
SASH



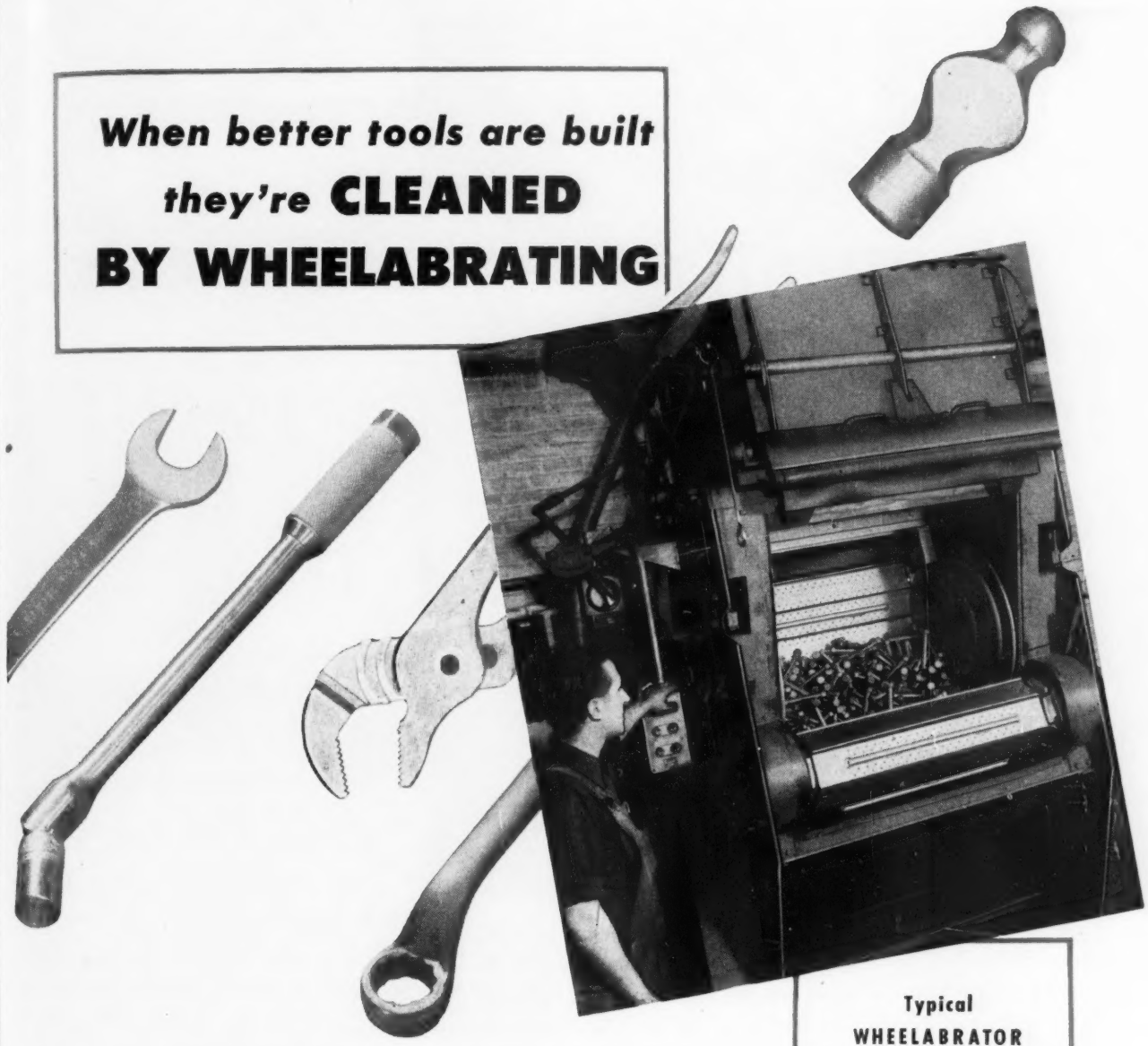
Architects and Engineers, more and more, specify the use of protective zinc coatings for the *utmost protection* to metal components of all types of exposed structures.

The American Hot Dip Galvanizers Association have established and are pledged to follow the highest standards in Hot-Dip Job Galvanizing. They assure the highest quality of workmanship, the best in materials, and employ the newest and most modern methods.

The collective know-how of the entire membership is available to you through the member whose location can best serve you. For membership roster write the Secretary, American Hot Dip Galvanizers Association, First National Bank Building, Pittsburgh, Pa.

hot-dip
GALVANIZING

When better tools are built they're CLEANED BY WHEELABRATING



WHEELABRATING: . . . industrial word meaning airless blast cleaning . . . a *faster,* much more *productive* and *vastly more economical* method of cleaning metals such as castings, forgings, heat-treated work, stampings, etc. RESULTS: . . . a nationwide metal-cleaning revolution . . . a "chain-reaction" of users who proved airless WHEELABRATOR'S immense adaptability and the savings it provides . . . and then passed the good word along. CONCLUSION: . . . for every type of tool-cleaning, WHEELABRATING gives spotless cleaning and quick return of the investment.

Typical WHEELABRATOR users in the tool industry

- Brown & Sharpe Mfg. Co.
- Plomb Tool Co.
- L. S. Starrett Co.
- Skilsaw, Inc.
- Greenfield Tap & Die Corp.
- Millers Falls Co.
- Union Twist Drill Co.

A booklet that can brighten your tool-cleaning outlook . . . ! Facts, figures, photos. Write for your copy today!

American
WHEELABRATOR & EQUIPMENT CORP.
(FORMERLY AMERICAN FOUNDRY EQUIPMENT CO.)
509 S. Byrkit St., Mishawaka 5, Indiana

BUILD WITH

AW DYNALLOY

A new era of lightweight construction has been opened by AW Dynalloy, the versatile high strength low alloy steel. Bigger payloads in trucks, freight cars and buses are now made possible. With AW Dynalloy you can reduce dead-weight as much as 40% without any reduction in strength or safety. This extremely tough steel has 4 to 6 times greater resistance to atmospheric corrosion than plain carbon steel and twice that of copper bearing mild steel. AW Dynalloy's excellent weldability, ductility and cold forming properties combined with its high resistance to impact, abrasion and fatigue make it exceptionally valuable for constructing vehicles, portable and stationary structures. Look into the advantages of AW Dynalloy now.

Write for your copy of our New Folder H-11. It contains helpful information and maximum sizes.

PHYSICAL PROPERTIES OF AW DYNALLOY

Yield Point P.S.I. Minimum	50,000
Tensile Strength P.S.I.	65-80,000
Elongation in 2", %, Minimum	25.0
*Elongation in 8", %, Minimum	1,500,000 T. S.
Endurance Limit P.S.I.	45,000
Specimen Cold Bend, 180° @ diameter=1 thickness	

*For material under 5/16" to 3/16" inclusive, deduct 1.25 per cent for each decrease of 1/32" below 5/16" from the percentage of elongation in 8" specified above.

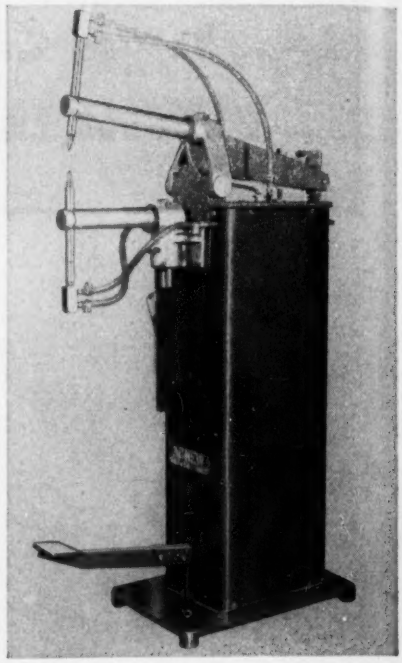
AW DYNALLOY

THE HIGH STRENGTH LOW ALLOY STEEL

A Product of ALAN WOOD STEEL COMPANY

CONSHOHOCKEN, PENNA.

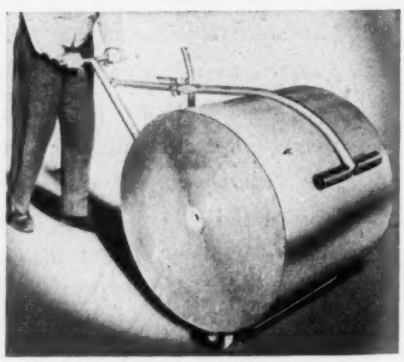
for getting into deep places. Welder construction is of fabricated steel with prelubricated bearings at wear points. It is furnished with disconnect switch mounted and wired, ready for



operation on connection to any single-phase alternating current power supply of 220, 380, 440 or 550 volts, 25, 50 or 60 cycles.

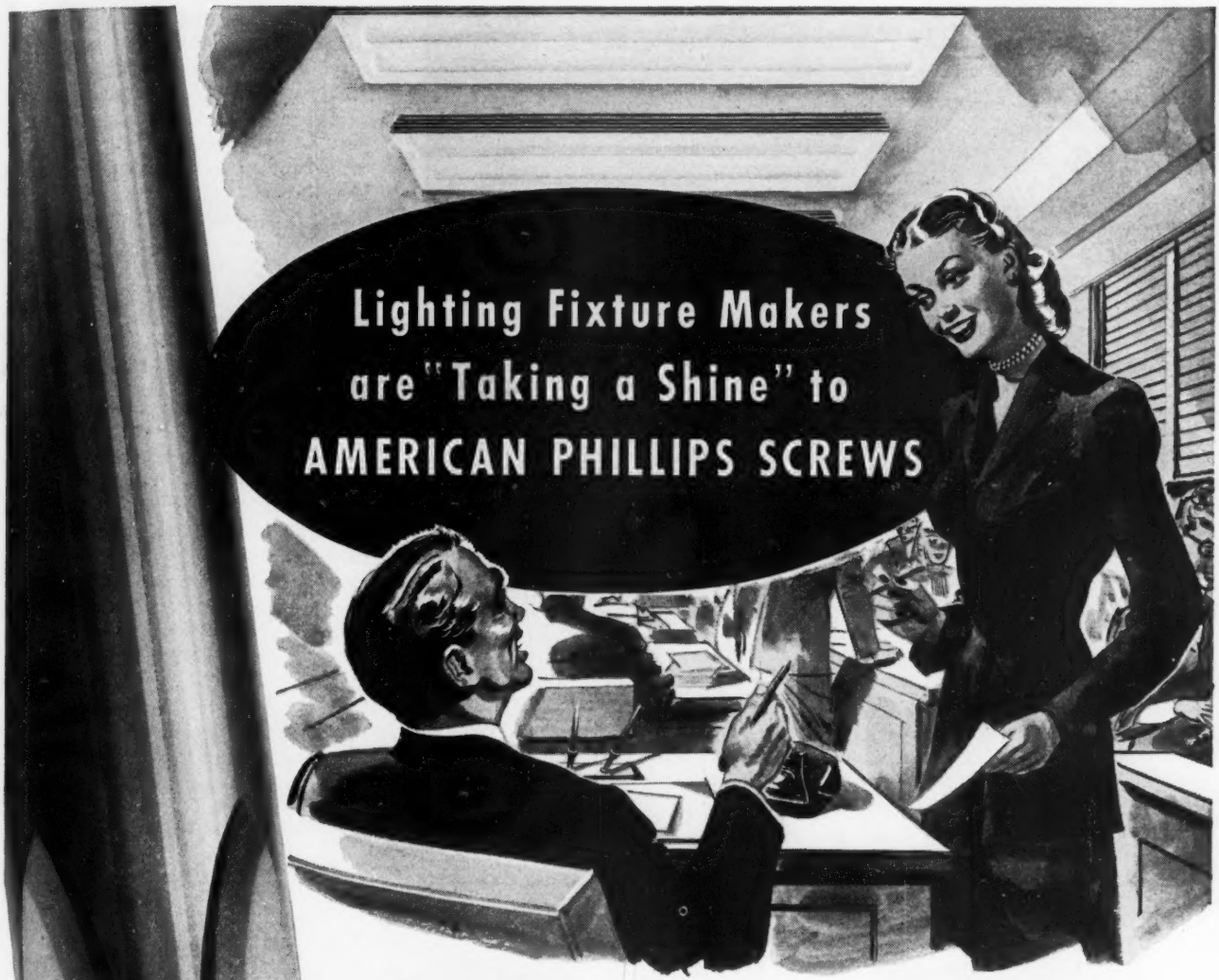
8. Roll Truck

Ironbound Box & Lumber Co., 102 Hoffman Place, Hillside, N. J., is introducing the RolTruk, an easy to handle unit which will lift and move heavy cylindrical objects such as



drums, barrels, kegs, paper, steel strip, etc. Once the arm of the truck is locked around the roll, it will not allow it to roll off until the finger-tip release is manually disengaged.

Truck is constructed from formed steel pipe and has a heavy steel cradle. Entire unit is welded. Two models are available: Model RTL, with a product diameter capacity up to 32 inches and weight capacity up to 800 pounds; and model RTH, with



...that Lighten the Cost Picture—Brighten Sales!

IN PRODUCTION—You'll get *new light* on assembly speeds when fumble-proof, slip-proof, damage-proof American Phillips Screws are on *your* job! These automatically straight-driving screws are a big answer to the demand, "We must have *more* production." And an equally big answer to "We must have *lower* costs"—because this *modern* method of fastening offers TIME-SAVINGS UP TO 50%!

IN PROMOTION—American Phillips Screws are the quality, high style fastening . . . in keeping with the rest of your product's sales-slanted design. The decorative *unburred* heads are eye-catchers (not clothes-catchers). They promise and *deliver* solid serviceability from here on in. Whether you make lamps or laundry equipment, boats or bicycles, your product can profit by your writing:

AMERICAN SCREW COMPANY, PROVIDENCE 1, RHODE ISLAND

Chicago 11: 589 E. Illinois St. *Detroit 2:* 502 Stephenson Building

AMERICAN PHILLIPS *Screws*

ALL TYPES
ALL METALS: Steel, Brass, Bronze, Stainless Steel, Aluminum, Monel, Everdur (silicon bronze)

the same diameter capacity and a weight capacity of up to 1500 pounds. Wheel types (rubber, plastic, steel) determine the weight capacity.

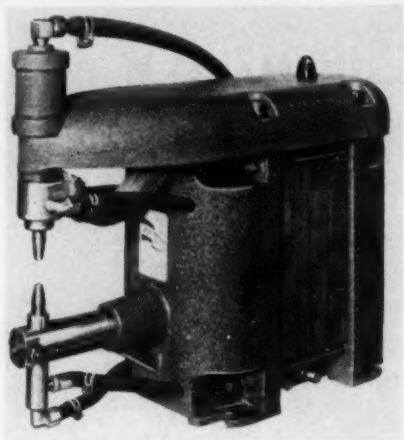
9. Tool Set

Various fly cutter tools, an offset boring and facing head, jacks, parallels and adapters are available in a single set developed by Davis Boring Tool Division, Gidding & Lewis Machine Tool Co., Fond du Lac, Wis. Especially useful on horizontal and vertical boring machines, typical set has seven different sized micrometer boring tools that have a cutting range in diameters from 1 1/4 to 7-inches and also a micrometer graduated boring and facing head with a work range from 0 to 13 inches equipped with different type cutters which can be mounted in tool slide either parallel to or at right angles to tool shank.

Setup accessories in set have been chosen to speed mounting the work. Available in sets of four are: Parallel blocks, adjustable stop jacks, and stop and jack blocks. Design of micrometer adjusted fly cutters permits making cutter settings which will produce precision bores that are desired by the machine operator.

10. Spot Welder

Operation with equal ease in any position, quick adjustment to new applications, basic simplicity of design and minimized maintenance are features of the new 3 kilovolt-ampere spot welder announced by Banner Products Co., 4965 North 29th St., Milwaukee 9, Wis. Units may be set up in a series, working off of a single timer and foot switch.



Frame of the welder consists of three aluminum castings. Water-cooled transformer operates on 220 or 440 volts, 60 cycle and has three heat ranges. Lower arm is of 1-1/4-inch diameter hard drawn copper and has 3/4-inch diameter watercooled holders designed to take standard No. 1 Morse taper points. Throat of welder is 5 inches and stroke is 1 inch. Clean mild steel of 22-gage or lighter may be welded.

11. Horning Press

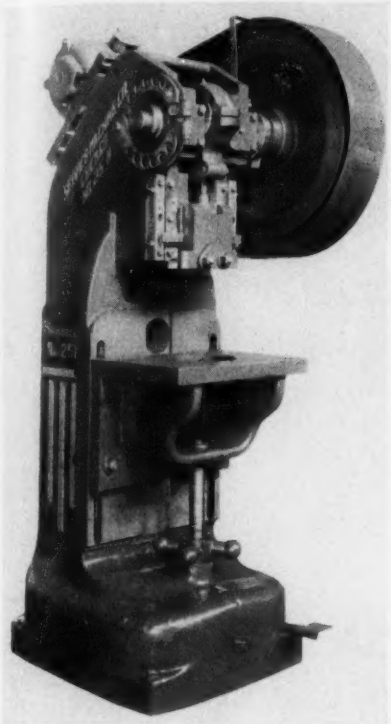
With an adjustable bed table which can be quickly and accurately raised or lowered to suit the die to be used, the new 25-ton Rousselle horning press, developed by Service Machine Co., 7627 South Ashland Ave., Chicago 20, Ill., has a die space which may be varied from 6 to 17 inches. It can be furnished with a special bed table with a maximum shut die height of 28 inches. Standard bed table measures 14 x 20 inches and has an 8-inch hole.

Design permits slugs or blanks to fall through the table without interference from the elevating screw. Bed table can be removed to give

(For more information, use card following page 158.)

A Complete Warehouse Service for...
SHEETS • PLATES
STRIP • STAINLESS STEEL
TIN PLATE • BARS • SHAPES
WIRE PRODUCTS • ALLOYS
Adequate Stocks!
Prompt Shipment!
Tri-Boro Steel Supply Co., Inc.
133 LINCOLN AVE., NEW YORK 54, NEW YORK • CYPRESS 2-3900
An Affiliate of
CHARLES A. KOONS & CO.
WORLD-WIDE EXPORTERS • NEW YORK • CLEVELAND • SAN FRANCISCO
main office—620 5th AVE., NEW YORK 20
Tri-Boro Steel Supply Co., Inc.

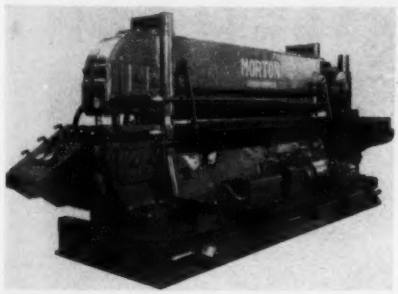
access to the 4-inch horn hole. Ways are of hardened and ground steel. Ram has a 1-6/16-inch ram hole or a special 2-inch hole. Flywheel, of solid



web type, is mounted on two sets of roller bearings. Presses have a single stroke attachment and can be changed over to repeat or continuous operation.

12. Flash Trimmer

Designed for use in a continuous process rolling or pickling line, the heavy duty flash trimmer, made by Morton Mfg. Co., Broadway and Hoyt, Muskegon Heights, Mich., removes the upset from the joints of strip which has been welded for continuous



processing. Strip is quickly moved to approximate center of the trimmer, a power horizontal traverse doing the final aligning of the machine with the weld. Machine is built to trim 38 to 120-inch wide sheets.

Shuttle type rams carrying a number of cutting tools, individually adjusted for the depth of cut automat-

"Automatic" Sprinkler
FOR INVESTMENT PROTECTION
SEATTLE
PORTLAND
SAN FRANCISCO
LOS ANGELES
IN THE PACIFIC COAST AREA
IT'S "Automatic" Sprinkler
FOR SAFETY WITH SAVINGS
No one can definitely measure the cost of a fire, for fire loss is seldom confined to the investment in visible destruction of buildings, equipment and records. The savings resulting from "Automatic" Sprinkler fire protection is, however, measurable in more ways than one.
For example, did you know that an approved "Automatic" Sprinkler installation brings at once a savings in insurance premiums? These savings are applicable toward the cost of installation and with "Automatic" Sprinkler's deferred payment plan, it is possible for you to put in a sprinkler system today . . . get all advantages of protection . . . no depletion of liquid capital . . . and, in a few short years, pay for the installation "out of savings."
A discussion of your fire hazard problems with one of our many representatives who serve the Pacific Coast and all other areas of the Western Hemisphere will enable you to thoroughly evaluate "Automatic" Sprinklers, an important investment today . . . perhaps welcomed protection tomorrow.
"Automatic" Sprinkler
FIRST IN FIRE PROTECTION
DEVELOPMENT · ENGINEERING MANUFACTURE · INSTALLATION
"AUTOMATIC" SPRINKLER CORPORATION OF AMERICA
YOUNGSTOWN 1, OHIO
OFFICES IN PRINCIPAL CITIES OF NORTH and SOUTH AMERICA

Design for

PERMANENCE!

...Are you battling a shortage of materials? Stainless steel may be able to win new competitive advantages for you—perhaps at little or no added cost—and you can get Allegheny Metal *now!*

CALL FOR AN ALLEGHENY LUDLUM ENGINEER

Allegheny Metal is the only stainless steel that is produced in *every* form or shape in which steel can be used.

That's advantageous to both the fabricator and user of stainless equipment. It means undivided responsibility, a single source of supply and of technical assistance, and the same dependably uniform quality from one end of the list to the other. Fabricating conditions are known and constant, with the result that cost figures are lower and the performance of finished equipment is better.

Best of all, you can *get* Allegheny Metal and you can get it *now,* in mill or warehouse shipments. Let us work with you—whatever your need or problem.

ALLEGHENY LUDLUM
STEEL CORPORATION
Pittsburgh, Pa.

Nation's Leading Producer of Stainless Steels in All Forms

AL

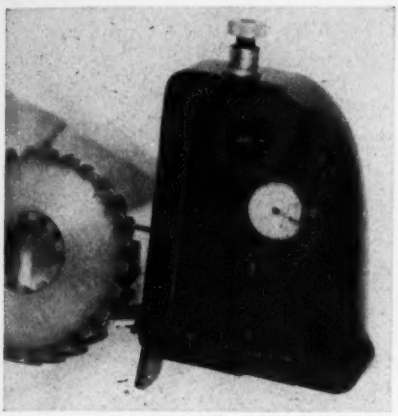
WAD 1554

ALLEGHENY METAL is stocked by all Joseph T. Ryerson & Son, Inc. warehouses

ically, move across the sheet, driven by chain drives. Cycle of operation is automatic. After weld and machine are aligned, a pushbutton causes the upper housing to lower to the clamped position. When clamped, rams move across the sheet and cut the flash. At end of fixed travel, limit switches start the unclamp and ram return motion and reset machine for next trim.

13. Gear Checker

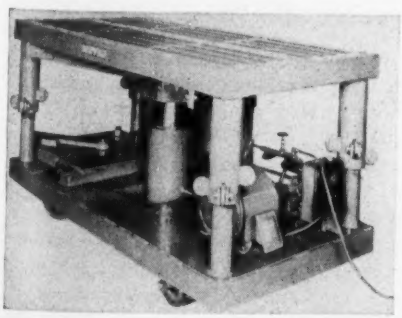
Chordal measurements, tooth spacing, tooth thickness, diametral pitch, pressure angle, backlash allowance and pitch diameter are determined in one operation on spur and helical gears by the Gearmaster system of



gear checking, developed by Urbauer Engineering Co., Napersville, Ill. System consists of a patented precision micrometer and specially designed gear charts. Checking is five to 20 times as fast.

14. Die Lifting Table

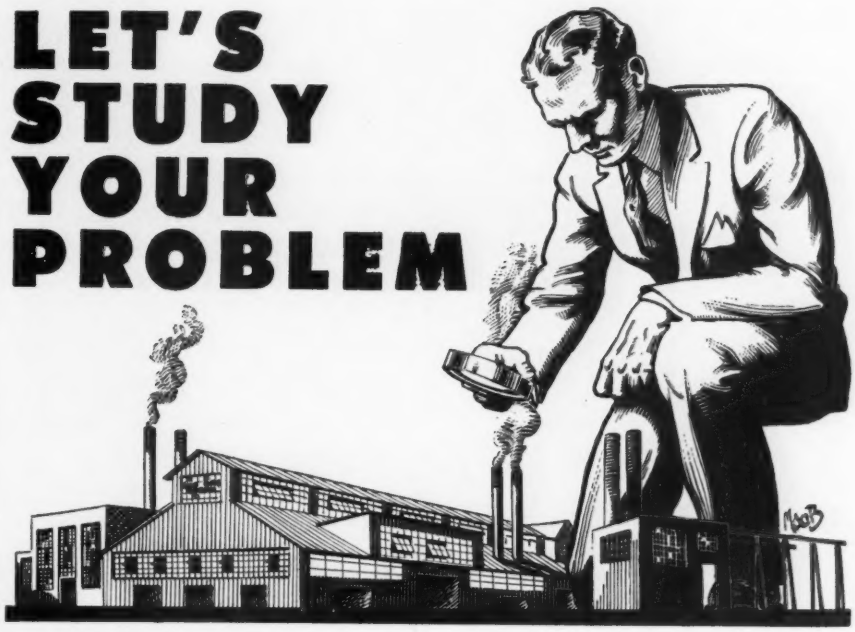
Dies weighing up to 12 tons may be handled with the electric hydraulic Liftable, developed by Service Caster & Truck Corp., Somerville, Mass. With rollers to discharge the load



from either side, the 36 x 72 inch die table has a raised height of 40 inches and a lowered height of 30 inches.

Hydraulic system is activated by a 1 1/2-horsepower motor and table top is raised with a pushbuttom con-

LET'S STUDY YOUR PROBLEM



Is it a New Plant?

Is it Modernization?

Is it Increased Capacity?

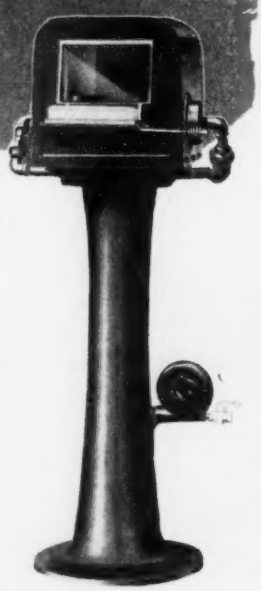
Is it Materials Handling?

Is it Processing?

Is it Power?

SHREVE, WALKER AND ASSOCIATES
Engineers and Architects
DETROIT 26, MICHIGAN

HIGH-SPEED STEEL
HEAT-TREATING COSTS
SLASHED!



Quick Acting JOHNSON

NO. 120 Hi-Speed Furnace

- 1500° F. in 5 minutes
- 2300° F. in 30 minutes

Compact, powerful and remarkably economical in operation. Johnson No. 120 is unexcelled for heat treating high speed steels . . . for hardening any steel tools, dies, or small metal parts. Ideal for brazing carbide tipped tools. Gets the job done FAST to save time and gas. Two burners fire under hearth to assure clean, uniform heat. Easily regulated with accuracy. Firebox 5 x 7¾ x 13½ lined with high temperature insulating refractory. Complete with Carbofrax Hearth, G.E. Motor, and Johnson Blower.

$145.50
F. O. B. Factory

CUTS MELTING TIME IN HALF

$148.00
F. O. B. Factory

WRITE FOR FREE CATALOG

Describes famous JOHNSON Furnaces for pot hardening, melting, annealing, heat treating. Industrial gas burners and torches. Write for copy.

NEW JOHNSON 616 METAL MELTING FURNACE

Melts 600 pounds of lead in 29 minutes

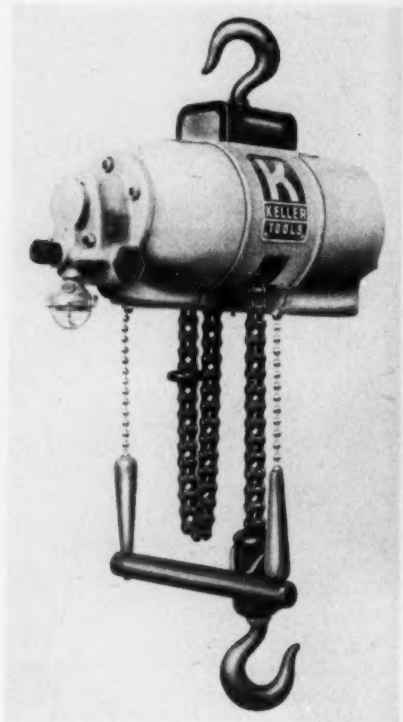
The Johnson No. 616 offers unusual efficiency and remarkable operating economy in melting such soft metals as lead, zinc, tin, babbitt, aluminum, or type metal. This strongly constructed furnace is equipped with six powerful Johnson direct jet burners to cut melting time in half. These burners are the most efficient and economical made and develop highest flame temperature without forced air blast. Each has independent shutoff valve and pilot light. Melting temperatures up to 1500°F. are quickly reached with all six burners. Three burners then hold temperature at operating level to permit substantial fuel savings. Heavy insulating refractory around removable pot retains heat and minimizes operator fatigue. Equipped with 600 pound capacity removable cast iron pot.

JOHNSON GAS APPLIANCE COMPANY
573 E AVENUE N. W., CEDAR RAPIDS, IOWA

trol. A hand valve controls the lowering. The 8-wheel running gear includes four rigid casters and four 8-inch diameter wheels on a fifth-wheel unit.

15. Air Hoist

Variable speed which gives the operator full control of positioning, raising and lowering of the load at any desired speed from a creep to 17 feet per minute is a feature of the model



86-2V20 air hoist of 1 ton capacity built by Keller Tool Co., Grand Haven, Mich.

Hoist has a standard lift of 8 feet. Built-in safety features include safety stops, alloy steel roller chains and drop forged swivel hook. Installation is simplified by light weight of hoist—75 pounds.

16. Spindle Power Feed

Many milling cycles on No. 12 plain milling machines, made by Brown & Sharpe Mfg. Co., Providence 1, R. I., that require the accurate lowering and raising of the machine spindle in conjunction with regular table movements may be accomplished by a spindle power feed arrangement designed for that machine. Settings can be made to accurately position the cutter at two different heights in any cycle and to raise and lower the cutter several times during any cycle.

Spindle head feed rates are available from 1/2 to 7 5/8-inches per minute by use of change gears and are independent of table feeds. Spin-

When tomorrow is too late—when only the best will do—ask your Bunting Distributor. He has, available now, Bunting Bars of Bearing Bronze and Bunting Standard Stock Bronze Bearings—Quality Bronze in its most usable forms. The Bunting Brass & Bronze Company, Toledo 9, Ohio. Branches in Principal Cities.

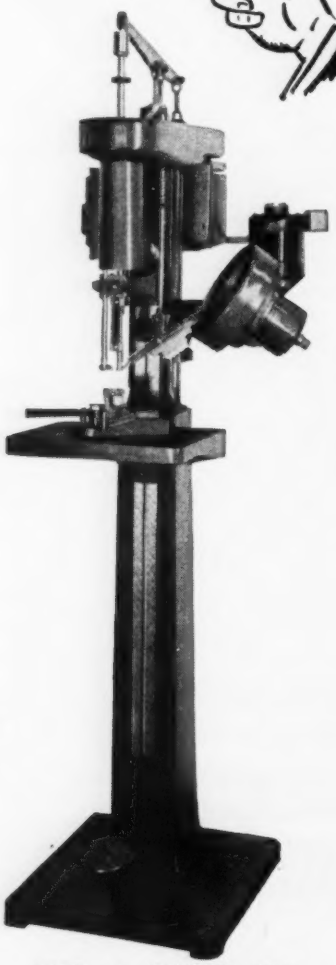
PRECISION BRONZE BARS

BRONZE BEARINGS

BUSHINGS

Bunting

71



MODEL A PICTURED drives No. 2 to No. 6 Screws.
2 OTHER MODELS: Model B drives from No. 6 to ¼" Screws.
MODEL C from ¼" to ⅝" diameter screws.

YEARS have proved the indispensability of these husky, hopper-fed machines. Users from coast to coast know how essential they are in keeping pace with modern production through tremendous saving in time and labor. They give constant service, speed and ease of operation.

Detroit Power Screwdrivers will drive screws at one second each; no marring of heads or stripping threads. All screws driven to uniform tension. Will drive standard machine screws, sheet metal screws, self-tapping screws with standard round, flat, binder, fillister, or hex heads and special heads.

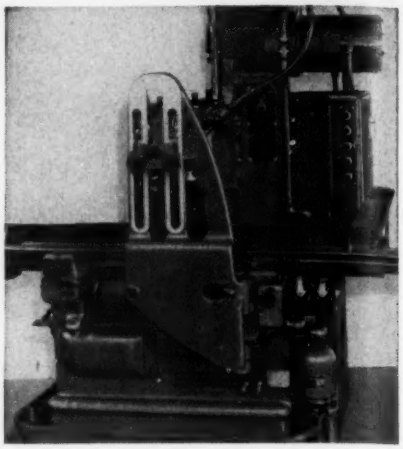
Send Sample Assembly for Production Estimate.

See us at Booth 913, Tool Engineer's Industrial Exposition, Cleveland, Mar. 15 to 19 Inc.

DETROIT POWER SCREWDRIVER CO.

2811 W. Fort Street
DETROIT 16, MICH.

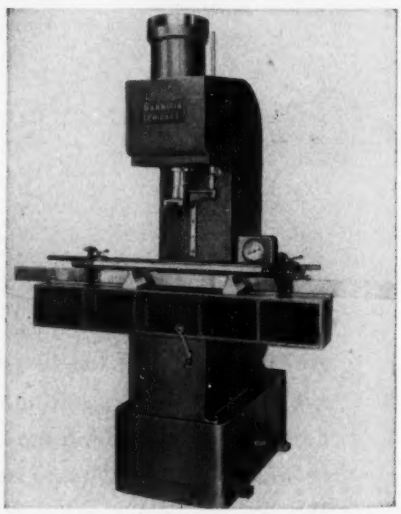
dle head fast travel rate is 30 inches per minute. Drive is by brake type motor. Dogs operate various electri-



cal devices for controlling the arrangement automatically and hand control is provided by knobs and buttons.

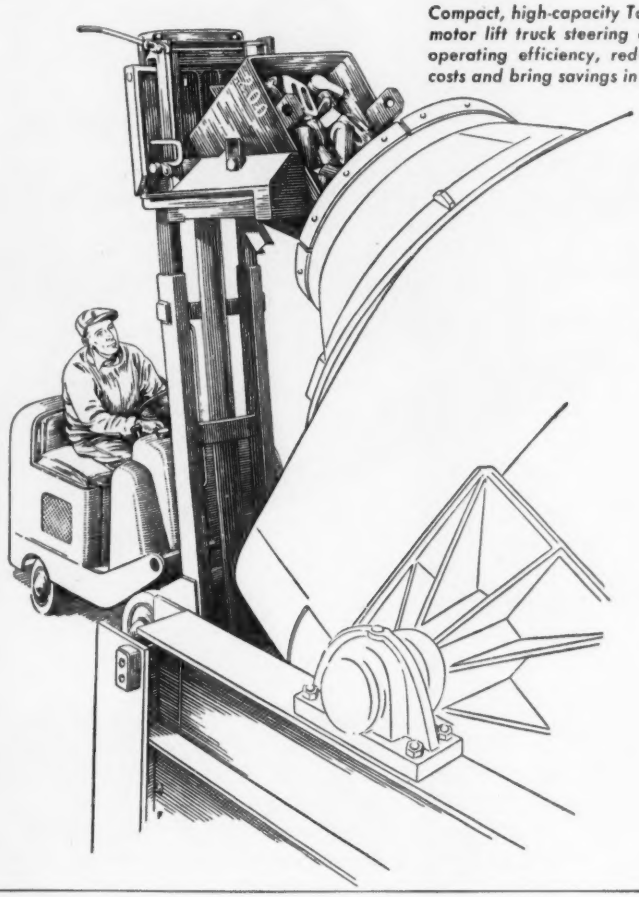
17. Hydraulic Presses

Hydraulic presses for a wide variety of straightening, forcing, forming, assembling, broaching and similar operations have been standardized by Hannifin Corp., 1101 South Kilbourn Ave., Chicago 24, Ill. Seventy-five standard presses in capacities ranging from 6 to 150 tons with a



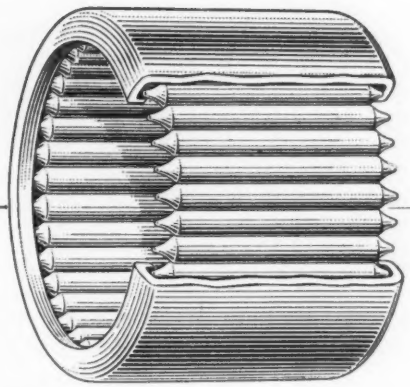
wide choice of control equipment, accessories and fixtures are included.

Standardized presses are designated as series S straightening series F forcing and series C column type presses. Series S presses, one of which is illustrated, are produced in 17 different models, series F open gap forcing presses in 10 models and series C four-column presses in 48 models. Series S and F have a control permitting varying ram pressure in proportion to pressure on the con-



Compact, high-capacity Torrington Needle Bearings in Towmotor lift truck steering and load-lifting mechanisms raise operating efficiency, reduce lubrication and maintenance costs and bring savings in design, fabrication and assembly.

Lift Efficiency and Lower Costs with Torrington Needle Bearings



... in operation as well as in design and manufacture, these efficient anti-friction units reduce costs.

ONE WAY to give product efficiency a lift...and to put skids under operating and manufacturing costs...is to use Torrington Needle Bearings.

Check these features with your own product in mind:

1. *High capacity* means heavier payload, longer life, greater safety factor.
2. *Small size* allows streamlining, smaller component parts, compact construction.
3. *Light weight* means minimum dead weight, easy handling.
4. *Low friction coefficient* assures reduced power consumption, minimum wear.
5. *Efficient lubrication* means less maintenance attention, lower lubricating cost.
6. *Unit construction* provides simplicity of design, ease of assembly.

These cost-saving, efficiency-building advantages will work for you in the equipment you *build*...or *buy*. Our engineers will gladly give you the benefit of their specialized experience in adapting Torrington Needle Bearings to your product. Call or write the nearest Torrington office or direct to:

THE TORRINGTON COMPANY

Torrington, Conn. • South Bend 21, Ind.

District Offices and Distributors in Principal Cities

TORRINGTON *NEEDLE* **BEARINGS**

NEEDLE · SPHERICAL ROLLER · STRAIGHT ROLLER · TAPERED ROLLER · BALL · NEEDLE ROLLERS

the Corporation President

WHO ALMOST SLEPT TOO LONG

T. M. Stanton* was having a nightmare. For months he'd been preoccupied with the production problems of Empire Gadgets, Inc. So preoccupied, he'd even half-admitted to himself that he was devoting far less thought to national problems than a leading citizen should. But the urgency of his immediate interests kept shoving these concerns into his subconscious mind. Now they were torturing his sleep.

"T. M., old boy," one spectre was saying, "how would you like a nice black depression to come along and swallow up your whole company?" And a green-eyed ogre leered, "While you're neglecting your free-enterprise system, we're moving in with *another* system!"

Stanton's body lurched. "No!" he thundered. Awakened, he scratched his head, murmuring, "Gad, what a dream! H-m-m—wonder what sort of contribution I ought to be making . . ."

Here's Something, Mr. President, You Ought to Do Right Away!

Check up on the status of the Payroll Savings Plan in your company. By making U. S. Savings Bonds easily available to your employees "on the installment plan," it benefits not only the employees but your business and the nation as well! Here's how:

(1) The Payroll Savings Plan builds financial security for each participant. The Bonds pay $4 at maturity for every $3 invested.

(2) The experience of 19,000 companies operating the Payroll Savings Plan shows that it makes employees more contented in their jobs—cuts down absenteeism—even reduces accidents!

(3) The Plan helps to spread the national debt and thus helps secure your business future. How this works is clearly and briefly described in the free brochure shown below.

Why Executive Backing Is Vital

Employees still want the benefits of the Payroll Savings Plan. In fact, they *need* the P. S. P., because banks don't sell Bonds on a partial-payment plan—which is the way most workers prefer to buy them. But war-time emotional appeals are gone. Human nature being what it is, the success of the Plan in your company is liable to dwindle unless a responsible executive *keeps promoting it.*

So—today—*check up* on the status of the Payroll Savings Plan in your company. *Act* on your responsibility to see that it is vigorously maintained.

The State Director will gladly help.

Be sure to read this! *"The National Debt and You," a 12-page brochure, brings you the views of W. Randolph Burgess, Vice Chairman of the Board of The National City Bank of New York —and of Clarence Francis, Chairman of the Board, General Foods Corporation. Request your copy from the Treasury Department's State Director, Savings Bonds Division.*

**This one is fictitious—but it might be* any *corporation president.*

The Treasury Department acknowledges with appreciation the publication of this message by

STEEL

This is an official U. S. Treasury advertisement prepared under the auspices of the Treasury Department and The Advertising Council.

trol lever. A choice of 18, 36 and 60-inch space between columns, left to right, and capacities from 6 to 150 tons is offered on series C presses.

18. Gage Block Gage

Length of precision gage blocks may be accurately checked by air with no gage point contact using a new comparator gage developed by Sheffield Corp., Dayton 1, O. The comparator consists of a gaging unit and a Precisionaire base instrument with

an amplification up to 40,000 to 1. Wringing of the gage block to the anvil is not necessary.

Gaging unit has one jet in the diagonally serrated anvil and another in the gaging head which is mounted on the bracket, adjustable vertically on the column. Gage blocks are checked against a master calibrated set of blocks which are used in setting up the comparator and obtaining a zero reading. Any change of the float when the block to be checked is placed on the anvil indicates a deviation from the master. The amount is read directly from a graduated scale.

19. Foot Lift Truck

Reduction by one-third of the foot pressure necessary to lift loads into moving position or maximum height eases and accelerates operation of the foot lift equipped Dual Lift Transporter, a development of Automatic Transportation Co., 149 West 87th St., Chicago 20, Ill. As installed on the electric propelled hand truck, the foot lift features a hydraulic lift pump which combines a low pressure (high speed) cylinder for raising the platform or forks into contact with skid or pallet and a high pressure (low speed) cylinder for raising the load.

Release of pressure on the pump pedal opens the valve that permits the high speed cylinder to idle while the

"M H" is MASS HANDLING—the systematic movement of the most units, in the shortest time, at the lowest cost.

You Need MH to SAVE TIME!

FREE! Send for your copy of the "Towmotor Materials Handling Analysis Guide"—it shows you how to analyze and improve handling operations in your plant.

TOWMOTOR CORP., DIVISION 16, 1226 EAST 152ND ST., CLEVELAND 10, OHIO
REPRESENTATIVES IN PRINCIPAL CITIES

WHY BUILD A NEW PLANT when you can modernize your present handling methods and streamline production operations with Towmotor Mass Handling? Towmotor Fork Lift Trucks, Tractors and Accessories will insure the most efficient use of present production equipment, manpower and space. Learn now how a versatile Towmotor can save time by speeding up handling operations in your plant.

TOWMOTOR
THE ONE-MAN-GANG

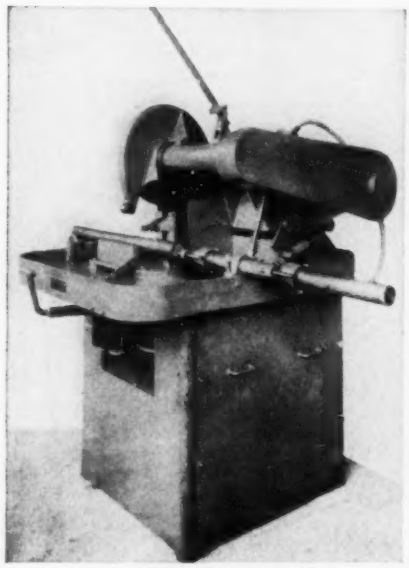
Fork Lift Trucks and Tractors

RECEIVING • PROCESSING • STORAGE • DISTRIBUTION

high pressure cylinder is lifting the load. Pump is interchangeable with the three earlier model transporter pumps and is available separately. It may be easily installed on all Transporters in service.

20. Cut-off Machine

Applicable to machine shops where brass, bronze and steel in bar stock, tubing, angles and flats require cutting is the new cut-off machine designed by Tabor Mfg. Co., 6225 Tacony St., Philadelphia 35, Pa. Cost



per individual cut is reduced by providing adequate power to maintain the proper wheel speed in cutting any quantity of metal or plastic. Power is supplied by a fully enclosed, fan cooled 10 horsepower motor.

A quick acting clamp, tension of which is adjusted by a hand wheel, on each side of wheel holds stock securely. When cut begins, an adjustable stop swings to an upright position, preventing the cut piece from binding the wheel. Coolant is fed to both sides of cutting wheel. Both spindle and trunnion are roller bearing mounted.

21. Vapor Degreaser

Vapor degreasing of small parts at an average rate of 400 pounds of steel per hour is possible with the new electric vapor degreaser, built by Phillips Mfg. Co., 3475 West Touhy Ave., Chicago 45, Ill. It is small enough and light enough to be moved around the plant to locations where electric power and water connections are available.

Degreaser is equipped with a Reso-Kleen sump which permits reclamation of soiled solvent by distillation within the degreaser during normal operation. The tank is of arc welded steel construction with the interior protected by corrosion resistant zinc metal spray.

DEVELOPED BY . . .

22. National Dunnage Co., Dallas 6, Tex., a spur cleat in several sizes, used to brace freight loads in transit in all types of freight carriers. Cleat anchors product against longitudinal, transverse and vertical motion.

23. American Optical Co., Southbridge, Mass., plastic face shield designed to be worn in combination with the company's respirators. Shield protects face against flying particles striking from the front.

24. Lipe-Rollway Corp. Syracuse, N. Y., portable power hack saw has cutting adjustments ranging from solid tough materials to thin wall tubing. Work holding vise capacity is 3 x 3-inches and will hold 2 1/2-inch iron pipe.

25. Hexacon Electric Co., Roselle Park, N. J., hatchet type iron for very light soldering. Iron is rated at 40 watts with ¼-inch tip, and can be furnished in 50 or 60 watts with ⅛-inch tip.

26. Tracerlab Inc., Boston 10, Mass., Laboratory Monitor (Model SU-3) for routine contamination monitoring. Chief uses are for checking laboratory benchtops and glassware for contamination even from low energy emitters.

27. Bede Products Inc., Cleveland 11, O., Trirex paint heater with capacity of 7 gallons per hour at temperatures from 60° to 200° F. It uses a 1000 watt immersion heater at either 110 or 220 volts.

28. Fisher & Porter Co., Hatboro, Pa., rotameter type laboratory kit for flow measurement. Kit consists of metering tube holder with base plate and hose connections, four interchangeable tubes and six metering floats with calibration data.

29. Quaker Rubber Co., Philadelphia 24, Pa., special packing for drop hammer piston rods in sizes from 3/16 to 1¼-inch in multiples of 1/16-inch and from 1¼ to 3 inches in multiples of ⅛-inch.

30. Westinghouse Electric Corp., Pittsburgh 30, Pa., industrial spot light for illuminating welding, cutting or brazing work. Power requirement for the lamp and accessories is 30 watts at 115 volts, 60 cycles.

31. General Electric Co., Pittsfield, Mass., a new adhesive for bonding silicone rubber to itself and to glass, metals and ceramics. Capable of metals and ceramics. It withstands continuous temperatures up to 350° F, and remains flexible and resilient over temperatures from −70° to 520° F.

32. New Method Steel Stamps Inc., Detroit 7, Mich., stamping devices for hand stamping around a flat radius such information as heat treat, codes, batch numbers and part numbers.

33. DoAll Co., Des Plaines, Ill., spiral saw with 360° cutting edge. Cutting of material in any direction without rotating work is possible. Cutting tool available in 0.040 and 0.074 diameters with 15 tooth pitch.

34. Chicago Wheel & Mfg. Co., Chicago 7, Ill., electric eraser for drafting rooms. All parts except eraser are completely covered.

35. Montgomery & Co., New York 7, N. Y., twin-loupes for precision workers. Available in four powers with aluminum frames these eye aids leave both hands free for use.

36. Richardson-Allen Corp., 15 West Twentieth Street, New York, N. Y., selenium rectifiers with 36 position tap switch controls. Standard units are available up to 27 kilowatts capacity.

37. National Petroleum Sales Inc., 315 West Ninth Street, Los Angeles, Calif., a protective coating which resists electrolysis and corrosion. Nontoxic, it has a flash and fire point in excess of 500°F.

38. Buckingham Mfg. Co., Binghamton, N. Y., safety seat with a chest harness made for work in stacks and tanks. When used in rescue work it holds a person upright while he is being removed from danger area.

FOR MORE INFORMATION
on the new products and equipment in this section, fill in a card. It will receive prompt attention.

Market Summary

STEEL PRICES—Uncertainty over the trend of steel prices prevails despite assurances of leading industry executives no general advance is contemplated. Inflationary forces still are pressing steel production costs upward. Further, wage negotiations are just ahead. In these circumstances consumers are skeptical of price stability, and such skepticism is bound to prevail until the wage issue has been disposed of.

Meanwhile, the steel price picture is confused. Actually, a variety of prices prevail. For example, all producers did not advance semifinished and structural shapes recently, some continuing to quote as formerly. Major producers have not revised prices on sheets and strip but several smaller mills have announced advances, up to $10 per ton. Then, of course, another set of prices applies in negotiated deals involving ingot conversion tonnage, and, still further blurring the picture, are a multiplicity of prices quoted in the gray market.

Last week it became generally known about mid-February several leading producers of track spikes revised size extras, which upped large spikes about an average of 8 per ton.

PRICE COMPOSITES—Composite market averages compiled by STEEL for the week ended Mar. 6 were unchanged from the preceding week. The finished steel index stood at $81.14 against $69.82 a year ago, that on semifinished steel at $68.72 against $52.10 last year, that on steelmaking pig iron at $39.38 compared with $32.11 a year ago, and that on steelmaking scrap at $40.17 against $35.58 a year ago.

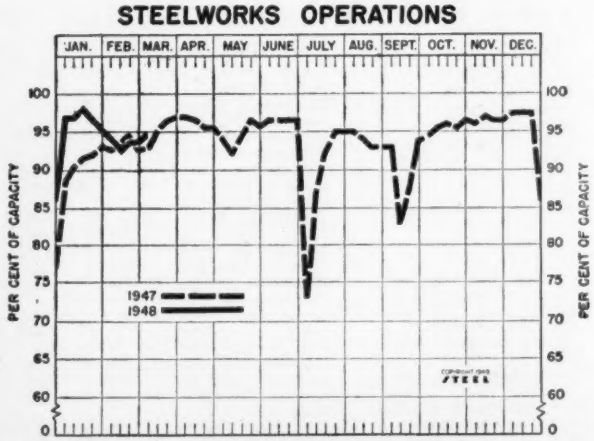
CONSUMER QUOTAS—Most buyers with regular mill connections have been advised of their second quarter quotas but they continue on the anxious seat, fearing allotments may be cut before the quarter ends. This fear persists in the face of likely heavier steel production in the period, barring possible labor trouble, especially in the coal mines. The fact is, however, as the international situation looms more menacingly there is increasing speculation as to domestic defense requirements, to say nothing of European recovery needs and proposed allocation of tonnage for critical domestic requirements.

DEMAND PRESSING—Except for a little more caution in ordering, the pressure for tonnage is unabated, especially in the major categories. As a matter of fact, pressure appears increasing in some directions. Demand for alloy bars, stainless steel sheets and cold-finished bars, all of which had been in comparatively easy supply for months past, has definitely turned stronger. Most sellers of alloy bars now are unable to promise deliveries before late May or early June compared with promises of five to seven weeks earlier in the year. Sellers of stainless sheets have extended deliveries by at least three to four weeks. Cold-finished bar producers report business improving with tonnage limited by the shortage of hot-rolled bars.

RAW MATERIALS—Shortage of pig iron appears as pronounced as ever. Foundries continue to scramble for tonnage but are meeting with little success in obtaining their requirements though some easing in demand for castings is noted here and there. With some foundries the coke shortage is even more acute than that in pig iron.

Scrap continues to show signs of easiness though no change in prices was reported last week in the leading consuming centers. The steel mill price formula is the top prevailing on steelmaking grades and some small tonnages are reported to have been moved under that level. With milder weather scrap is flowing in much better volume and the outlook is for continued improvement. Even foundry grades of scrap are showing a slight turn toward the easy side in some districts but prices in this division of the market continue high and strong.

STEELWORKS OPERATIONS



DISTRICT STEEL RATES

Percentage of Ingot Capacity engaged in Leading Districts

	Week Ended Mar. 6	Change	Same Week 1947	Same Week 1946
Pittsburgh	94	+ 1	93.5	88
Chicago	94	+ 2	93	74
Eastern Pa.	91	None	88	73
Youngstown	103	+ 1	90	75
Wheeling	90	None	89	90.5
Cleveland	94	— 1	91	88.5
Buffalo	88.5	+ 2.5	88.5	63
Birmingham	100	None	99	86
New England	85	None	90	87
Cincinnati	90	None	91	81
St. Louis	77.5	None	74.5	63.1
Detroit	90	+ 1	88	88
Estimated national rate	94.5	+ 1	93	77.5

Based on weekly steelmaking capacity of 1,802,476 net tons for 1948; 1,749,928 tons for 1947; 1,762,381 tons for 1946.

COMPOSITE MARKET AVERAGES

Arithmetical Price Composites*

	Mar. 6	Feb. 28	Month Ago Feb. 1948	Year Ago Mar. 1947	5 Years Ago Mar. 1943
Finished Steel	$81.14	$81.14	$79.86	$69.82	$56.73
Semifinished Steel	68.72	68.72	67.16	52.10	36.00
Steelmaking Pig Iron	39.38	39.38	39.30	32.40	23.00
Steelmaking Scrap	40.17	40.17	40.48	37.25	19.17

FINISHED STEEL WEIGHTED COMPOSITE†

Dec. 1947	3.49055c
Nov. 1947	3.47536c
Dec. 1946	2.91932c
Dec. 1942	2.38793c

* Straight Arithmetical Composites: Computed from average industry-wide base prices on Finished Carbon Steel (hot-rolled sheets, cold-rolled sheets, cold-rolled strip, hot-rolled bars, plates, structural shapes, basic wire, standard nails, tin plate, standard and line pipe), on Semifinished Carbon Steel (rerolling billets and slabs, sheet bars, skelp, and wire rods), on Basic Pig Iron (at eight leading basing points), and on Steelworks Scrap (No. 1 heavy melting grade at Pittsburgh, Chicago and eastern Pennsylvania). Steel arithmetical composite, dollars per net ton; pig iron and scrap, gross ton.

† Finished Steel Weight Composite: Computed in cents per pound, base prices, weighted by actual monthly shipments of following products, representing 80 per cent of total steel shipments in the latest month for which statistics are available, as reported by American Iron & Steel Institute; Structural shapes; plates; standard rails; hot and cold-finished carbon bars; black butt weld pipe and tubes; black lap weld pipe and tubes; black electric weld pipe and tubes; black seamless pipe and tubes; drawn wire; nails and staples; tin and terne plate; hot-rolled sheets; cold-rolled sheets; galvanized sheets; hot-rolled strip; and cold-rolled strip.

COMPARISON OF PRICES

Representative market figures for current week; average for last month, three months and one year ago. Finished material (except tin plate) and wire rods, cents per lb; semifinished (except wire rods) and coke, dollars per net ton; others dollars per gross ton.

Finished Materials

	Mar. 6, 1948	Feb., 1948	Dec., 1947	Mar., 1947
Steel bars, Pittsburgh	2.90c	2.90c	2.90c	2.60c
Steel bars, del. Philadelphia	3.356	3.356	3.318	2.98
Steel bars, Chicago	2.90	2.90	2.90	2.60
Shapes, Pittsburgh	2.80	2.80	2.80	2.50
Shapes, del. Philadelphia	2.968	2.968	2.954	2.64
Shapes, Chicago	2.80	2.80	2.80	2.50
Plates, Pittsburgh	2.95	2.95	2.95	2.65
Plates, del. Philadelphia	3.19	3.19	3.17	2.85
Plates, Chicago	2.95	2.95	2.95	2.65
Sheets, hot-rolled, Pittsburgh	2.80	2.80	2.80	2.50
Sheets, cold-rolled, Pittsburgh	3.55	3.55	3.55	3.20
Sheets, No. 10 galv., Pittsburgh	3.95	3.95	3.90	3.55
Sheets, hot-rolled, Gary	2.80	2.80	2.80	2.50
Sheets, cold-rolled, Gary	3.55	3.55	3.55	3.20
Sheets, No. 10 galv., Gary	3.95	3.95	3.90	3.55
Strip, hot-rolled, Pittsburgh	3.05	2.925	2.80	2.50
Strip, cold-rolled, Pittsburgh	3.80	3.675	3.55	3.20
Bright basic, bess. wire, Pittsburgh	3.775	3.775	3.675	3.425
Wire nails, Pittsburgh	5.20	4.95	4.625	4.125
Tin plate, per base box, Pittsburgh	$6.70	$6.70	$5.75	$5.75

Semifinished

Sheet bars, Pittsburgh, Chicago	$60.00	$53.57	$60.00*	$50.00*
Slabs, Pittsburgh, Chicago	45.00	40.18	47.50*	42.00*
Rerolling billets, Pittsburgh	45.00	40.18	47.50*	42.00*
Wire rod 7/32 to ¼-inch, Pitts.	3.175c	3.10c	3.05c	2.55c

* Per gross ton.

Pig Iron

	Mar. 6, 1948	Feb., 1948	Dec., 1947	Mar., 1947
Bessemer, del. Pittsburgh (N.&S. sides)	$40.996	$40.996	$37.913	$34.83
Basic, Valley	39.00	39.00	36.00	33.00
Basic, eastern del. Philadelphia	42.004	42.004	38.84	34.26
No. 2 fdry., del. Pgh. (N.&S. sides)	40.496	40.496	37.413	34.33
No. 2 fdry., del. Philadelphia	42.504	42.504	39.34	34.76
No. 2 foundry, Chicago	39.00	39.00	36.00	33.00
No. 2 foundry, Valley	39.50	39.50	36.50	33.50
Southern No. 2, Birmingham	37.88	37.88	34.88	29.28
Southern, No. 2, del. Cincinnati	40.74	40.74	37.74	34.15
Malleable, Valley	39.50	39.50	36.50	33.50
Malleable, Chicago	39.50	39.50	36.50	33.50
Charcoal, low phos., fob Lyles, Tenn.	55.00	55.00	50.00	40.50
Ferromanganese, fob cars, Pittsburgh	151.00	151.00	151.00	140.25

Scrap

Heavy melt. steel, No. 1, Pittsburgh	$40.25	$40.44	$40.00	$37.25
Heavy melt. steel, No. 2, E. Pa.	39.00	39.125	41.625	38.50
Heavy melt. steel, No. 1, Chicago	38.75	39.125	38.75	35.125
Heavy melt, steel, No. 1, Valley	40.25	40.25	39.75	37.19
Heavy melt. steel, No. 1, Cleveland	39.75	39.75	39.25	36.19
Heavy melt. steel, No. 1, Buffalo	44.00	43.63	42.50	37.75
Rails for rerolling, Chicago	49.75	51.00	58.625	40.75
No. 1 cast, Chicago	66.00	66.00	55.875	43.25

Coke

Connellsville, beehive furnace	$12.50	$12.50	$12.25	$8.875
Connellsville, beehive foundry	14.875	14.78	14.50	10.375
Chicago, oven foundry, del.	19.25	19.25	18.975	16.10

FINISHED AND SEMIFINISHED IRON STEEL PRODUCTS

Finished steel quoted in cents per pound and semifinished in dollars per net ton, except as otherwise noted. Prices apply on an individual producer basis to products within the range of sizes, grades, finishes and specifications produced at its plants. Delivered prices do not include the 3 per cent federal tax on freight.

Semifinished Steel

Carbon Steel Ingots: Rerolling quality, standard analysis, open market, $90-$95 per gross ton. Forging quality $46, Pittsburgh, Chicago, Gary, Cleveland, Birmingham, Buffalo, Youngstown.

Alloy Steel Ingots: Pittsburgh, $56, per gross ton.

Rerolling Billets, Blooms, Slabs: Pittsburgh, Chicago, Gary, Buffalo, Birmingham, $45; Cleveland, $47; sales by smaller interests on negotiated basis at $85 per gross ton, or higher.

Forging Quality Billets, Blooms, Slabs: Pittsburgh, Chicago, Gary, Cleveland, Buffalo, Birmingham, $54.

Alloy Billets, Slabs, Blooms: Pittsburgh, Chicago, Buffalo, Bethlehem, Canton, Massillon, $66 per gross ton.

Sheet Bars: Pittsburgh, Chicago, Cleveland, Buffalo, Canton, Youngstown, $60 nom.; sales in open market $95-105 per gross ton.

Skelp: Pittsburgh, Youngstown, 2.90c per lb.

Tube Rounds: Pittsburgh, Chicago, Gary, Cleveland, $69-70; some sellers quoting up to $120.

Wire Rods: Pittsburgh, Chicago, Birmingham, 7/32 to ¼-inch, inclusive, $2.80-3.55 per 100 lb. 7/32 to 47/64-in., inclusive, $2.75, Cleveland; Galveston, $2.95; Worcester, $2.90-2.95. San Francisco (base del.), $3.5245.

Bars

Hot-Rolled Carbon Bars (O.H. only) and Bar-Size Shapes under 3-in.: Pittsburgh, Youngstown, Chicago, Gary, Cleveland, Buffalo, Birmingham, base, 20 tons one size, 2.90c; Detroit, del., 3.06c; eastern Mich., 3.13c; New York, del., 3.392c; Phila., del., 3.356c; San Francisco (base, del.), 3.6345-3.95c; Los Angeles (base, del.), 3.629-3.86; Seattle, 3.85c, base.

Rail Steel Bars: Same basing points as merchant carbon bars, except base is 10 tons. Prices upon application.

Hot-Rolled Alloy Bars: Pittsburgh, Youngstown, Chicago, Canton, Massillon, Buffalo, Bethlehem, base 20 tons one size, 3.30c. (Texas Steel Co. uses Chicago base price as maximum fob Fort Worth, Tex., price on sales outside Texas, Oklahoma.)

Cold-Finished Carbon Bars: Pittsburgh, Chicago, Gary, Cleveland, Buffalo, base 20,000-39,999 lb., 3.55c; Detroit, del., 3.71c; Toledo, 3.78c.

Cold-Finished Alloy Bars: Pittsburgh, Chicago, Gary, Cleveland, Buffalo, Canton, base, 4.10c.

Reinforcing Bars (New Billet): Pittsburgh, Chicago, Gary, Cleveland, Birmingham, Sparrows Point, Buffalo, Youngston, base, 2.75c; San Francisco (base, del.), 3.3345c; Los Angeles (base, del.), 3.329c; Seattle, 3.88c base.

Reinforcing Bars (Rail Steel): Pittsburgh, Chicago, Gary, Cleveland, Birmingham, Youngstown, Buffalo. Prices upon application.

Iron Bars: Single refined, Pittsburgh 7.15c-†7.70c, double refined 8.00-†9.75c; Pittsburgh, staybolt, 8.85c-†11.25c.

† Hand puddled.

Sheets

Hot-Rolled Sheets (18 gage and heavier): Pittsburgh, Chicago, Gary, Cleveland, Birmingham, Buffalo, Youngstown, Sparrows Point, Ashland, Ky., base, 2.80c; Granite City, 3.175c; Detroit, del., 2.96c; eastern Mich., del., 3.03; Philadelphia, del., 3.04c; New York, del., 3.172c; Los Angeles (base, del.), 3.544c; San Francisco, (base, del.), 3.5495c, (Alan Wood Steel Co., Conshhocken, Pa., quotes 3.40c, Sparrows Point equivalent).

Cold-Rolled Sheets: Pittsburgh, Chicago, Cleveland, Gary, Buffalo, Youngstown, Middletown, base, 3.55c; Granite City, 3.65c; Detroit, del., 3.71c; Eastern Mich., del., 3.78c; New York, del., 4.042c; Philadelphia, del., 4.006c.

Galvanized Sheets, No. 10: (Based on 5 cent zinc) Pittsburgh, Chicago, Gary, Birmingham, Sparrows Point, Canton, Middletown, base, 3.95c; Youngstown, 3.95c-4.45c; Granite City, 4.35; New York, del., 4.322c; Philadelphia, del., 4.19c; Los Angeles (base, del.), 4.724c; San Francisco (base, del.), 4.7295c.

Corrugated Galvanized Sheets, No. 10: (Based on 5 cent zinc) Pittsburgh, Chicago, Gary, Birmingham base, 4.05c.

Culvert Sheets, No. 16 flat: (Based on 5 cent zinc; corrugated 10 cents extra) Pittsburgh, Chicago, Gary, Birmingham: Copper alloy, 4.55c; copper-iron or pure iron, 4.90c Granite City 5.00c and 5.35c, respectively. Los Angeles (base, del.), 5.344c; San Francisco (base, del), 5.3495c.

Aluminized Sheets: Hot-dipped, coils or cut to lengths: Pittsburgh, 7.50c.

Stainless-Clad 20%, annealed and pickled: Pittsburgh, Washington, No. 304, 22.00c; No. 410, 20.00c; No. 430, 20.50c; No. 446, 27.00c.

Long Ternes, No. 10: Pittsburgh, Chicago, Gary, base, 4.05c.

Enameling Sheets, No. 12: Pittsburgh, Chicago, Gary, Cleveland, Middletown, 3.95c; Youngstown 3.95c-4.45c; Granite City, 4.05c; Detroit, del., 4.11c; eastern Mich., 4.18c.

Electrical Sheets, No. 24: Field: Pittsburgh, Chicago, Gary, 4.50c; Kokomo, Ind., 4.60c, Armature: Pittsburgh, 4.80c-530c; Chicago, Gary, 4.80c; Granite City, Ill., 5.25c; Kokomo, Ind., 4.90c. **Electrical:** Pittsburgh, 5.30c-5.80c; Chicago, Gary, 5.30c; Granite City, Ill., 5.75c; Kokomo, Ind., 5.40c. **Motor:** Pittsburgh, 6.05-6.80c; Chicago, Gary, 6.05c; Granite City, 6.50c.

Dynamo: Pittsburgh, 6.75c; Granite City, 7.20c. Transformer 72, 7.25-8.25c; 65, 7.95-9.20c; 58, 8.65-9.90c; 52, 9.45c, Pittsburgh.

Strip

Hot-Rolled Strip: Pittsburgh, Chicago, 2.80c-3.30c; Gary, Birmingham, Youngstown, base, 2.80c; Detroit, del., 2.96c; eastern Mich., del., 3.03c; San Francisco (base, del.), 3.605c; Los Angeles (base, del.), 3.60c.

Cold-Rolled Strip: 0.25 carbon and less: Pittsburgh, 3.55c-4.05c; Cleveland, Youngstown, 3.55c; Chicago, base, 3.65c-4.05c; Detroit, del. 3.71c; eastern Mich., 3.78c; Worcester, base, 3.75c-4.45c.

Cold-Finished Spring Steel: Pittsburgh, Cleveland base: 0.26-0.40 carbon, 3.55c; over 0.40 to 0.60 carbon, 5.05c; over 0.60 to 0.80, 5.65c; over 0.80 to 1.05, 7.15c; over 1.05 to 1.35, 9.45c; add 0.20c for Worcester.

Tin, Terne, Plate

Tin Plate: Pittsburgh, Chicago, Gary, Warren, O., per base box of 100 lb, 1.25 lb coating $6.60, 1.50 lb coating $6.80; Granite City, Birmingham, Sparrows Point, 1.25 lb coating $6.70, 1.50 lb coating $6.90.

Electrolytic Tin Plate: Pittsburgh, Gary, Warren, O., per base box of 100 lb, 0.25 lb tin, $5.80; 0.50 lb tin, $6.00; 0.75 lb tin $6.20; Granite City, Birmingham, Sparrows Point, $5.90, $6.10, $6.30, respectively.

Can Making Black Plate: Pittsburgh, Gary, Warren, O., per base box of 100 lb 0.55 to 0.70 lb tin, $5.20; 0.75 to 0.95 lb tin, $5.10; 100 to 128 lb tin, $5.20.

Hollowware Enameling Black Plate: Pittsburgh, Chicago, Gary, Warren, O., base 29-gage, 4.75c per lb; Granite City, Birmingham, Sparrows Point, 4.85c per lb.

Manufacturing Ternes (Special Coated): Pittsburgh, Chicago, Gary, per base box of 100 lb, $5.90; Granite City, Birmingham, Sparrows Point, $6.00.

Roofing Ternes: Pittsburgh, per package 112 sheets; 20 x 28 in., coating I.C. 8-lb $15.50.

Plates

Carbon Steel Plates: Pittsburgh, Chicago, Gary, Cleveland, Birmingham, Youngstown, Sparrows Point, 2.95c; Coatesville, 3.45c; Claymont, 3.65c; Geneva, Utah, (base, del.), 3.125c; Det., del., 3.21c; New York, del., 3.322c; Phila., del., 3.19c; Boston, del., 3.423c; St. Louis, del., 3.269c; San Francisco and Los Angeles, del., 3.693c for sizes and grades produced at Geneva, 3.76c for sizes and grades produced at Fontana, Calif.
(Central Iron & Steel Co., Harrisburg, Pa., 4.75c, basing points.)

Floor Plates: Pittsburgh, Chicago, Cleveland, 4.20c.

Open-Hearth Alloy Plates: Pittsburgh, Chicago, 3.80c-4.137c; Coatesville, 4.80c.

Clad Steel Plates: Coatesville, 10% cladding: Nickel clad, 21.50c; inconel-clad, 30.00c; monel-clad, 24.00c. Pittsburgh, Washington, Coatesville, Pa., 20% stainless-clad, base prices including annealing and pickling; No. 304, 24.00c; No. 410, 22.00c; No. 430, 22.50c; No. 446, 29.00c.

Shapes

Structural Shapes: Pittsburgh, Chicago, Gary, Birmingham, Buffalo, Bethlehem, 2.80c; New York, del., 3.088c; Phila., del., 2.968c; Geneva, Utah (base, del.), 2.975c; Los Angeles (base, del.), 3.41-3.474c for sizes produced at Torrance, Calif., beyond sizes at Geneva; Los Angeles and San Francisco, del., 3.543c for sizes produced at Geneva; San Francisco, del., 3.41c for sizes produced at Fontana, Calif.

Alloy Structural Shapes: Pittsburgh, Chicago, 3.55c.

Steel Piling: Pittsburgh, Chicago, Buffalo, $3.30 per 100 lb.

Wire and Wire Products

(Fob Pittsburgh, Chicago, Cleveland and Birmingham per 100 pounds.)

Wire to Manufacturers in carloads

Bright, basic or bessemer	*$3.55–4.00
Basic MB Spring (except Birm.)	**$4.95
Upholstery Spring (except Birm.)	†$4.60

Wire Products to Trade in carloads

Wire, Merchant Quality	
Annealed (6 to 8 base)	††$4.20
Galvanized (6 to 8 base)	††$4.65
(Fob Pittsburgh, Chicago, Duluth, Birmingham, per base column).	
Nails	
Standard, cement-coated, galvanized	‡94
Staples, polished and galvanized	‡‡94
Woven fence, 15 gage and heavier	§100
Barbed wire, 80-rod spool	§§113
Fence Posts (with clamps)	107
Bale ties, single loop	§99

* Worcester, $3.65, Duluth, $3.60, base, San Francisco (base, del.), $4.56, bright basic only.

** Worcester, $5.05; Duluth & Trenton, N.J., $5.20 (bright only); San Francisco (base del.) $5.9845.

† Worcester $4.70, Duluth and Trenton, N. J., $4.85, base. San Francisco (base, del.) $5.6345 black upholstery.

†† Worcester $4.30, annealed; $4.75, galvanized. Duluth $4.20, annealed, $4.65, galvanized. San Francisco (base, del.) $5.21, annealed, $5.66 galvanized.

‡ Cols. 108 and 114 also quoted Pittsburgh; Worcester 100; Cleveland 97; San Francisco (base, del.) 115.

‡‡ Cols. 108 and 114 also quoted Pittsburgh; Worcester 100, San Francisco (base del.) 115.

§ San Francisco (base del.) 123.

§§ San Francisco (base del.) 133.

Rails, Supplies

Rails: Standard, over 60-lb fob mill, $2.75 per 100 lb. Light rails (billet), Pittsburgh, Birmingham, $3.10 per 100 lb; light rails (rail steel), Williamsport, Pa., Pittsburgh prices upon application.
Relaying, 60 lb and over fob warehouse $60-$65 per net ton.

Supplies: Track bolts, 7.00c; heat treated, 7.25c. Tie plates, $3.65 per 100 lb, fob mill; $3.40 base, Seattle; $3.80 base, Pittsburg, Calif. Splice bars $3.85 per 100 lb, fob mill. Standard spikes, 4.85c; screw spikes, 6.75c. Axles, 4.50c.

Tubular Goods

Standard Steel Pipe: Base price in carlots, threaded and coupled, to consumers about $200 a net ton Base discounts Pittsburgh on all types; Lorain on steel butt weld, and seamless; Gary, Ind., 2 points less on steel lap weld and 1 point less on steel butt weld on sizes produced in that district.

	Butt Weld			Butt Weld	
In.	Blk.	Gal.	In.	Blk.	Gal.
⅛	44½	17	1	52½	36½
¼	44½	21½	1¼	53	37
⅜	41	17	1½	53½	37½
½	47	29½	2	54	38
¾	50	33½	2½ & 3	54½	38½

	Lap Weld		Elec. Weld		Seamless	
In.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.
2	44½	28	44	27½	43½	27
2½-3	48½	32	47	30½	46½	30
3½-6	50½	34	49	32½	48½	32

Line Steel Pipe: Base price in carlots to consumers about $200 a net ton. Base discounts Pittsburgh and Lorain, O.

	Butt Weld		Butt Weld
In.		In.	
⅛	43½	1	51½
¼	43½	1¼	52
⅜	40	1½	52½
½	46	2	53
¾	49	2½ & 3	53½

In	Lap Weld	Elec. Weld	Seamless
2	43½	43	42½
2½ & 3	47½	46	45½
3½-6	49½	48	47½
8	55½	50	49½
10	55	49½	49
12	54	48½	48

Standard Wrought Iron Pipe: Base price in carlots, threaded and coupled, to consumers about $200 a net ton. Base discounts Pittsburgh.

	Butt Weld			Lap Weld	
In	Blk.	Gal.	In	Blk.	Gal.
½	+11	+35	2	—1½	+20
¾	+ 1½	+25	2½-3½	—4	+16
1 and 1¼	— 4	+16½	4	—8	+10½
1½	— 9½	+13	4½-8	—6	+12
2	—10	+12½			

Boiler Tubes: Net base prices per 100 ft, fob Pittsburgh, in carload lots, minimum wall thickness, cut lengths 4 to 24 feet, inclusive.

		Seamless		Elec. Weld	
O.D.		Hot	Cold	Hot	Cold
Sizes	B.W.G.	Rolled	Drawn	Rolled	Drawn
1"	13	....	$12.46	$11.51	$11.51
1¼"	13	....	14.76	11.48	13.64
1½"	13	$14.00	16.47	12.69	15.22
1¾"	13	15.92	18.74	14.43	17.31
2"	13	17.84	20.99	16.17	19.39
2¼"	13	19.88	23.40	18.02	21.62
2¼"	12	21.90	25.77	19.86	23.80
2½"	12	23.99	28.21	21.75	26.06
2¾"	12	25.42	29.90	23.05	27.63
3"	12	26.68	31.40	24.18	29.00
3¼"	11	31.06	36.55	28.16	33.77
3½"	11	33.35	39.26	30.23	36.27
4"	10	41.40	48.70	37.53	44.99
4½"	9	54.87	64.58	....	....
5"	9	63.52	74.74	....	....
6"	7	97.51	114.73	....	....

Pipe Cast Iron: Class B, 6-in. and over $79.50 per net ton, Birmingham; $84.50, Burlington, N. J.; $91.12, del. Chicago; 4-in. pipe, $5 higher; class A pipe, $5 a ton over Class B.

Bolts, Nuts

Fob Pittsburgh, Cleveland, Birmingham, Chicago; add 19c per cwt in carlots, Lebanon, Pa. Additional discounts: 5 for carloads; 15 for full containers, except tire, step, plow bolts.

Carriage and Machine Bolts

½-in. and smaller; up to 6 in. in length	45 off
⅝ and ¾ x 6-in. and shorter	46 off
¾-in. and larger x 6-in. and shorter	43 off
All diameters longer than 6-in.	41 off
Tire bolts	35 off
Step bolts	43 off
Plow bolts	54 off
Lag bolts	
All diameters 6 in. and shorter	46 off
All diameters longer than 6 in.	44 off

Stove Bolts

In packages, nuts separate, 65-10 off; bulk 75 off on 15,000 of 3-in. and shorter, or 5000 over 3 in., nuts separate.

Nuts

Semifinished hexagon	A.S. Light	A.S. Reg. and Heavy
⅞-in. and smaller	46 off	....
½-in. and smaller	....	44 off
½-in.-1-in.	44 off	....
⅝-in.-1-in.	....	43 off
1⅛-in.-1½-in.	42 off	41 off
1⅝-in. and larger	....	35 off

Additional discount of 15 for full containers.

Hexagon Cap Screws (Packaged)

Upset 1-in. smaller by 6-in. and shorter (1020 bright)	53 off
Upset (1035 heat treated)	
⅝ and smaller x 6 and shorter	48 off
¾, ⅞, & 1 x 6 and shorter	44 off

Square Head Set Screws

Upset 1-in. and smaller	57 off
Headless, ¼-in. and larger	40 off
No. 10 and smaller	52 off

Rivets

Fob Pittsburgh, Cleveland, Chicago, Birmingham

Structural ½-in. and larger	5.65c
Lebanon, Pa.	..5.65c plus 19c per cwt in cl.
⅞-in and under	55 off
Lebanon, Pa.	..55 off plus 19c per cwt in cl.

Washers, Wrought

Fob Pittsburgh, Chicago, Philadelphia, to jobbers and large nut and bolt manufacturers, lcl ..... $1-$2 off

Tool Steels

Tool Steels: Pittsburgh, Bethlehem, Syracuse, Canton, O., Dunkirk, N. Y., base, cents per lb; reg. carbon 16.00-17.00c; extra carbon 20.00c; special carbon 24.00c; oil-hardening 26.00c; high carbon-chromium 47.00c.

W	Cr	V	Mo	Base Per lb
18.00	4	1	...	82.00c
1.5	4	1	8.5	59.00c
12	3	0.50	...	67.00c
6.40	4.15	1.90	5	63.00c
5.50	4.50	4	4.50	80.00c

Stainless Steels

Base, Cents per lb

Grade	Bars, Drawn Wire, Structurals	Plate	Sheets	Hot Rolled Strip	Cold Rolled Strip
CHROMIUM NICKEL STEELS					
301	26.00c	29.50c	37.00c	22.00c	28.00c
302	26.00	29.50	37.00	23.50	30.50
303	28.50	31.50	39.00	29.50	36.00
304	27.50	31.50	39.00	25.50	32.50
308	31.50	37.00	44.50	31.00	38.00
309	39.00	43.50	51.00	40.50	51.00
310	53.50	56.50	57.00	53.00	61.00
316	43.50	48.00	52.00	43.50	52.00
321	31.50	37.00	44.50	32.00	41.50
347	36.00	41.50	49.00	36.00	45.50
431	21.00	24.00	31.50	19.00	24.50
440A	26.00	31.00	36.50	26.00	30.50
STRAIGHT CHROMIUM STEEL					
408	23.50	27.00	32.00	23.00	29.50
410	20.50	23.50	29.00	18.50	24.00
416	21.00	24.00	29.50	20.00	25.50
420	26.00	31.00	36.50	26.00	39.50
430	21.00	24.00	31.50	19.00	24.50
430F	21.50	24.50	32.00	20.50	27.00
442, 443	24.50	28.00	35.50	26.00	35.00
446	30.00	33.00	39.50	38.00	56.50
†501	9.00	13.00	17.50	13.00	18.50
†502	10.00	14.50	18.50	14.50	19.50
‡STAINLESS CLAD STEEL (20%)					
304	....	24.00	22.00	....	....
410	....	22.00	20.00	....	....
430	....	22.50	20.50	....	....
446	....	29.00	27.00	....	....

† Low chromium. ‡ Fob Pittsburgh and Washington, Pa.; plate prices include annealing and pickling.

RAW MATERIAL AND FUEL PRICES

Minimum delivered prices do not include 3 per cent federal tax.

Pig Iron

Per Gross Ton

	Basic	No. 2 Foundry	Malleable	Bessemer
Bethlehem, Pa., base	$40.00	$40.50	$41.00	$41.50
Newark, N. J., del.	42.208	42.708	43.208	43.708
Brooklyn, N. Y., del.	....	44.10	44.60	....
Philadelphia, del.	42.004	42.504	43.004	43.504
Birmingham, base	35.88†	36.38†	....	....
Cincinnati, del.	....	40.74	....	....
Buffalo, base	40.00†	40.00†	40.50†	41.00
Boston, del.	47.776	47.776	48.276	....
Rochester, del.	42.22	42.22	42.72	43.22
Syracuse, del.	43.025	43.025	43.525	44.025
Chicago, base	38.50	39.00	39.50	40.00
Milwaukee, del.	40.08	40.58	41.08	41.58
Muskegon, Mich., del.	....	43.60	44.10	....
Cleveland, fob furnace	38.50†	39.00†	39.50†	40.00
Akron, del.	40.50	41.00	41.50	42.00
Duluth, base	39.00	39.50	40.00	40.50
Erie, Pa., base	38.50	39.00	39.50	40.00
Everett, Mass., base	....	45.00	45.50	....
Granite City, Ill., base	39.50	40.00	40.50	....
St. Louis, del.	40.25	40.75	41.25	....
‡**Neville Island, Pa.,** base	39.00	39.50	39.50	40.00
Pittsburgh, del., N.&S. Sides	39.996	40.496	40.496	40.996
Provo, Utah, base	39.00	39.50	....	....
Seattle, Tacoma, Wash., del.	....	46.63	....	....
Portland, Oreg., del.	....	46.63	....	....
Los Angeles, San Francisco	46.13	46.63	....	....
Sharpsville, Pa., base	39.00	39.50	39.50	40.00
Steelton, Pa., base	40.00	40.50	41.00	41.50
Struthers, O., base	39.50	....	....	....
Swedeland, Pa., base	45.00	45.50	46.00	46.50
Toledo, O., base	38.50	39.00	39.50	40.00
Cincinnati, del.	42.70	43.20	....	....
Youngstown, O., base	39.00	39.50	39.50	40.00
Mansfield, O.	42.57	43.07	43.07	43.57

† Republic Steel Corp. quotes $3 a ton higher at Birmingham, effective Jan. 1, 1948; Republic quotes $5.50 higher for No. 2 foundry and malleable and $5.00 higher for basic at Buffalo, and $1.25 higher at Cleveland, effective on shipments during week ended Mar. 7.

‡ To Neville Island base add: 79.2c for McKees Rocks, Pa., $1.212 Lawrenceville, Homestead, McKeesport, Monaco; $1.788 Oakmont; $1.596 Verona; $1.788 Brackenridge; 99.6c to Ambridge and Aliquippa.

Blast Furnace Silvery Pig Iron

6.00-6.50 per cent (base)	$49.50		
6.51-7.00	$50.75	9.01- 9.50	57.00
7.01-7.50	52.00	9.51-10.00	58.25
7.51-8.00	53.25	10.01-10.50	59.50
8.01-8.50	54.50	10.51-11.00	60.75
8.51-9.00	55.75	11.01-11.50	62.00

Fob Jackson, O., per gross ton; Buffalo base $1.25 higher. Buyer may use whichever base is more favorable.

Bessemer Ferrosilicon

Prices same as for blast furnace silvery iron, plus $1 per gross ton.

Electric Furnace Silvery Pig Iron Si 14.01-14.50%, $77.50, Jackson, O.; $78.75, Niagara Falls; $78 open-hearth and $79 foundry grade, Keokuk, Iowa. Add $1 a ton for each additional 0.5% Si to 18%; 50c for each 0.05% Mn over 1%; $1 a ton for 0.045% max. phos.

Charcoal Pig Iron

Semi-cold blast, low phosphorus. Fob furnace, Lyles, Tenn.....$55.00 (For higher silicon irons a differential over and above the price of base grade is charged as well as for the hard chilling iron, Nos. 5 and 6.)

Gray Forge

Neville Island, Pa. $39.00

Low Phosphorus

Steelton, Pa., Buffalo, Troy, N. Y., $46.00. Philadelphia, $48.592, delivered. Intermediate phosphorus, Central furnace, Cleveland, $42.00.

Differentials

Basing point prices are subject to following differentials:

Silicon: An additional charge of 50 cents a ton for each 0.25 per cent silicon in excess of base grade (1.75% to 2.25%).

Phosphorus: A reduction of 38 cents a ton for phosphorus content of 0.70 per cent and over.

Manganese: An additional charge of 50 cents a ton for each 0.50 per cent, or portion thereof, manganese in excess of 1%.

Nickel: An additional charge for nickel content as follows: Under 0.50%, no extra; 0.50% to 0.74%, inclusive, $2 a ton; for each additional 0.25% nickel, $1 a ton.

Metallurgical Coke

Price per Net Ton

Beehive Ovens

Connellsville, furnace	$12.00-$13.00
Connellsville, foundry	14.00- 15.75
New River, foundry	12.50
Wise county, foundry	11.15
Wise county, furnace	10.65

Oven Foundry Coke

Kearney, N. J., ovens	$18.75
Chicago, outside del.	18.00
Chicago, del.	19.25
Terre Haute, ovens	18.50
Milwaukee, ovens	18.75
New England, del.	20.40-20.45
Birmingham, del.	15.76
Indianapolis, ovens	18.50
Cincinnati, del.	18.95
Ironton, O., ovens	16.75
Erie, Pa., del.	19.45
Painesville, O., ovens	18.10
Cleveland, del.	19.60
Buffalo, del.	20.15
Detroit, del.	19.00
Philadelphia, ovens	17.75
Swedeland, Pa., ovens	17.75
Portsmouth, O., ovens	17.00

Coal Chemicals

Spot, cents per gallon

Pure and 90% benzol	21.00†
Toluol, two degrees	28.00
Industrial xylol	28.00
Solvent naphtha	28.00

Per pound fob works

Phenol (car lots, returnable drums)	12.50
Do., less than carlots	13.25
Do., tank cars	11.50

Eastern plants, per pound

Naphthalene flakes, balls, bbl. to jobbers, "household use"	11.00

Per ton, bulk, fob plants

Sulphate of ammonia	$40.00

† Freight allowed up to 2 cents.

Refractories

Net Prices

Per 1000, fob shipping point

Fire Clay Brick

Super Duty

Pa., Mo., Ky.	$92.00

High Heat Duty

Pa., Ill., Md., Mo., Ky.	73.00
Ala., Ga.	73.00
N. J.	78.00

Intermediate Heat Duty

Ohio	67.00
Pa., Ill., Md., Mo., Ky.	67.00
Ala., Ga.	59.00
N. J.	70.00

Low-Heat Duty

Pa., Md., Ohio	59.00

Ladle Brick

(Pa., O., Va., Mo.)

Dry Press	50.00
Wire Cut	48.00

Malleable Bung Brick

All bases	$3.00

Silica Brick

Pennsylvania	73.00
Joliet, E. Chicago	82.00
Birmingham, Ala.	73.00

Basic Brick

Net tons, fob Baltimore, Plymouth Meeting, Chester, Pa.

Chrome brick	64.00
Chem. bonded chrome	64.00
Magnesite brick	86.00
Chem. bonded magnesite	75.00

Magnesite

Domestic dead-burned grains, net ton, fob Chewelah, Wash.

Bulk	27.00
Single bags	31.50

Dolomite

Domestic, dead-burned, bulk, net tons, fob Billmeyer, Blue Bell or Williams, Pa., Millville, W. Va., Nario, Millersville, Martin, Gibsonburg or Woodville, O., $11.05; Midwest (fob Thornton or McCook, Ill.), add $0.10; Missouri Valley (fob Dolly Siding, and Bonne Terre, Mo.), add $0.20.

Ores

Lake Superior Iron Ore

Gross ton, 51½% (Natural) Lower Lake Ports

Old range bessemer	$5.95
Old range nonbessemer	5.80
Mesabi bessemer	5.70
Mesabi nonbessemer	5.55
High phosphorus	5.55

Eastern Local Ore

Cents, units, del. E. Pa.

Foundry and basic 56.62% contract	15.20

Foreign Ore

Cents per unit, cif Atlantic ports

No. African low phos.	Nom.
Swedish basic, 60 to 68%.	13.50
Spanish, No. African basic, 50 to 60%	Nom.
Brazil iron ore, 68-69% fob Rio de Janeiro, nom.	5.50-6.50

Tungsten Ore

Wolframite and scheelite per short ton unit, duty paid	$26-$28

Manganese Ore

48-50%, duty paid, fob cars, New York, Philadelphia, Baltimore, Norfolk, Va., Mobile, Ala., New Orleans, 65.00-67.00c.

Chrome Ore

Gross ton fob cars, New York, Philadelphia, Baltimore, Charleston, S. C., plus ocean freight differential for delivery to Portland, Oreg., and/or Tacoma, Wash. (S S paying for discharge; dry basis, subject to penalties if guarantees are not met.)

Indian and African	
48% 2.8:1	$37.50
48% 3:1	39.00
48% no ratio	31.00
South African (Transvaal)	
44% no ratio	$25.50-$26.00
45% no ratio	26.50
48% no ratio	28.50
50% no ratio	29.50
Brazilian—nominal	
44% to 2.5:1 lump	$33.65
Rhodesian	
45% no ratio	$27-$27.50
48% no ratio	30.00
48% 3:1 lump	39.00
Domestic (seller's nearest rail)	
48% 3:1	$39.00

Molybdenum

Sulphide conc., lb., Mo. cont., Mines	$0.75

Fluorspar

Metallurgical grade, fob shipping point, in Ill., Ky., net tons, carloads, effective CaF_2 content, 70% or more, $35; less than 60% $32.

HIGH-STRENGTH—LOW-ALLOY STEELS

Prices in dollars per 100 pounds

	Pittsburgh	Chicago	Gary	Youngstown	Sparrows Point	Buffalo	Bethlehem	Canton	Massillon
Sheet, Hot-Rolled	4.30	4.30	4.30	4.30	4.30	4.30	...	...	...
Cold-Rolled	5.30	5.30	5.30	5.30	...	5.30	...	...	...
Galvanized	6.00	...	...	...	...	6.00	...	...	...
Strip, Hot-Rolled	4.30	4.30	4.30	4.30	...	...	...	...	...
Cold-Rolled	5.30	5.30†	5.30†	5.30	...	...	...	...	...
Shapes, structural	4.30	4.30	...	4.30	...	...	4.30	...	...
Plates	4.55	4.55	4.55	...	4.55	...	...	...	...
Bars, Small Shapes	4.45	4.45	4.45	4.45	...	4.45	...	4.45	4.45

† Nax High Tensile, produced by Great Lakes Steel Corp., quoted 10 cents higher.

WAREHOUSE STEEL PRICES

Prices, cents per pound, for delivery within switching limits, subject to extras.

	SHEETS					STRIP		BARS				PLATES	
	H-R 10G	C-R 10G	C-R 17G	Gal. *10G	Gal. *24G	†H-R	†C-R	H-R Rds. ⅜" to 3"	C-F Rds. ½" & up	H-R Alloy (**4140)	Structural Shapes	Carbon ⅜"-¾"	Floor ⅝" & Thicker
Boston (city)	5.03	6.09[4]	5.79[4]	6.23[4]	7.58[4]	5.61	6.87	5.04	5.88	7.64	4.91	5.18	6.86
New York (city)	4.96	6.16	5.86	6.16	7.51	5.59	...	5.06	5.63	7.23	4.80	5.11	6.78
New York (country)	4.81	6.01	5.71	6.01	7.36	5.44	...	4.91	...	...	4.65	4.96	6.63
Philadelphia (city)	4.70	6.32	5.92	5.90	7.25	5.32	5.72	4.87	5.75	8.77	4.57	4.85	6.47
Philadelphia (country)	4.55	6.18	5.78	5.75	7.10	5.17	5.57	4.73	...	...	4.47	4.71	6.32
Baltimore (city)	4.32†	5.95	5.65	5.72	7.07	4.80	...	4.85	5.71	...	4.71	4.77	6.30
Baltimore (country)	4.17†	5.80	5.50	5.50	6.85	4.65	...	4.70	...	...	4.56	4.62	6.15
Washington (city)	4.81	...	...	...	...	5.08	...	5.14	5.79[12]	...	4.98	5.03	6.60
Washington (country)	4.71	...	...	...	...	4.98	...	5.04	...	...	4.88	4.93	6.50
Norfolk, Va.	4.90	...	...	...	...	...	...	5.20	6.00	...	5.15	5.15	6.90
Memphis, Tenn. (city)	4.82[20]§§	5.87[20]†	...	6.37	...	5.02[20]	...	4.97[20]	5.87	...	4.97[20]	5.17[20]	6.87[20]
Memphis, Tenn. (country)	4.72[20]§§	5.77[20]†	...	6.27	...	4.92[20]	...	4.87[20]	5.77	...	4.87[20]	5.07[20]	6.77[20]
Buffalo (city)	4.45	...	5.20[8]	6.05	...	5.25	5.65	4.40	5.10	6.85	4.40	5.00	6.25
Buffalo (country)	4.30	...	5.05[8]	5.50	...	4.70	5.50	4.25	4.95	6.85	4.25	4.45	5.75
Pittsburgh (city)	4.25§§	...	5.10[8]†	5.65	6.90	4.35	5.35	4.40	5.10	6.85	4.40	4.60	5.90
Pittsburgh (country)	4.10§§	...	4.95[8]†	5.50	6.75	4.20	5.20	4.25	4.95	6.85	4.25	4.45	5.75
Cleveland (city)	4.45	5.50[8]	5.20[8]	5.82	7.17	4.55	5.35	4.40	5.10	7.22	4.70	4.60	6.05
Cleveland (country)	4.30	5.35[8]	5.05[8]	...	...	...	5.20	4.25	4.95	...	...	4.45	5.90
Cincinnati	4.56	...	5.22	5.77	...	4.77	...	4.78	5.63	...	4.82	4.98	6.47
Detroit	4.55	...	5.30	...	...	4.72	5.63	4.50	5.22	7.10	4.77	4.88	6.28
Indianapolis	4.55	5.32[8]	...	5.87	7.12	4.65	5.90	4.70‡‡	5.40	8.85	4.70	4.90	6.35
Chicago (city)	4.45	5.50[8]	5.20[8]	5.65	6.90	4.35	5.45	4.40	5.10	6.85[9]	4.40	4.60	6.05
Chicago (country)	4.30	5.35[8]	5.05[8]	5.50	6.75	4.20	5.30	4.25	4.95	6.85[9]	4.25	4.45	5.90
Milwaukee	4.658	5.708[8]	5.408[8]	5.858	7.108	4.558	5.658	4.608	5.308	7.208[9]	4.608	4.808	6.258
St. Louis	4.78	5.83[8]	5.53[8]	6.02	7.27	4.68	5.82	4.73	5.47[12]	...	4.73	4.93	6.38
Birmingham (city)	4.45[20]§§	...	...	5.65	...	4.45[20]	...	4.40[20]	5.93[22]	...	4.40	4.65	6.86
Birmingham (country)	4.30[20]§§	...	...	5.50	...	4.30[20]	...	4.25[20]	...	...	4.25	4.50	...
New Orleans	4.98[20]**	...	6.29[18]	...	...	5.18[20]	...	5.13[20]††	6.29[11]	...	5.03[8]††	5.33[18]	7.29[18]
Omaha, Nebr.	5.462	...	...	6.712	8.012	5.362	...	5.412	6.112	7.562	5.412	5.612	7.062
Houston, Tex.	5.75	...	...	7.36	8.10	6.00	...	5.35	7.00[12]	...	5.85	5.85	6.50
Los Angeles (city)	5.75	7.75[8]	7.45[8]	7.40	8.80	6.05	8.70	5.50	7.35[22]	9.35[10]	5.35	5.55	7.65
Los Angeles (country)	5.60	7.60[8]	7.30[8]	7.25	8.65	5.90	8.55	5.35	7.20[1]	9.20[10]	5.20	5.40	7.50
San Francisco	5.20[21]	6.65[8]	...	6.85[8]	7.75[8]	5.75[21]	8.70[18]	5.05[21]	7.00[12]	9.35	5.20[23]	5.30[23]	7.10[23]
Seattle, Tacoma, Wash.	5.30[17]§§	...	7.10[8]‡	6.95	...	5.60[17]	...	5.45[17]	7.45[19]	8.50[12]	5.25[17]	5.55[17]	7.65[19]
Portland, Oreg.	5.30[17]§§	...	7.10[8]‡	6.70	...	5.60[17]	...	5.45[17]	7.45[19]	...	5.25[17]	5.45[19]	7.55[19]

Base Quantities: 400 to 1999 lb except as noted: Cold-rolled strip, 2000 lb and over, cold finished bars, 1000 lb and over; galvanized sheets, 450 to 1499 lb; [1]—1500 lb and over; [2]—1000 to 4999 lb; [4]—three to 24 bundles; [8]—450 to 1499 lb; [9]—400 to 1499 lb; [9]—1000 to 1999 lb; [11]—1000 to 39,999 lb; [12]—1000 lb and over; [18]—2000 lb and over; [17]—300 to 9999 lb; [18]—1500 to 1999 lb; [19]—1500 to 39,999 lb; [20]—400 to 3999 lb; [21]—400 lb and over; [22]—500 to 1499 lb.

* Includes gage and coating extra, except Birmingham (coating extra excluded); † does not include gage extras; ‡ 15 gage; ** as rolled; †† add 0.40 for sizes not rolled in Birmingham; ‡‡ add 15c for 100 lb for slow moving items; §§ 18 gage and heavier.

PRICES OF LEADING FERROALLOYS PRODUCTS

MANGANESE ALLOYS

Spiegeleisen: (19-21% Mn, 1-3% Si). Carlot per gross ton, $47, Palmerton, Pa., $51, Pittsburgh. 16% to 19% Mn., $46, Palmerton, $50, Pittsburgh.

Standard Ferromanganese: (Mn 78-82%, C 7% approx.). Carload, lump, bulk $145 per gross ton of alloy, carload packed $157, ton lot $172, less ton $189; fob New Orleans, Mobile, Philadelphia, Baltimore, or New York. Carload, lump, bulk $151, fob cars Pittsburgh, including 50c switching charge. Add, or subtract, $1.80 for each 1%, or fraction thereof, of contained manganese over 82% or under 78%. **West Coast Prices:** Carload (80,000 lb or more), lump, bulk, same price and basing points as above. All other prices for shipment from Pacific Coast warehouses, add $26.21 to above prices. Delivery is fob Portland, Los Angeles, South San Francisco, or Seattle warehouses, with railroad freight allowed on shipments of 25 gross tons or more.

Low-Carbon Ferromanganese, Regular Grade: (Mn 80-85%). Eastern Zone, carload, lump, bulk, max. 0.10% C, 22.5c per lb of contained Mn, carload packed 23.25c, ton lot 24.35c, less ton 25.55c; Central, add 0.3c for c.l. and 1.1c for l.c.l.; Western, add 0.7c for c.l. and 4.4c for l.c.l. Freight allowed. Deduct 0.5c for max. 0.15% C grade from above prices, 1c for max. 0.30% C, 1.5c for max. 0.50% C, and 4.5c for max. 0.75% C—max. 7% Si. **Special Grade:** (Mn 90% approx., C 0.07% max., P 0.06% max.). Add 0.5c to above prices. Spot, add 0.25c.

Medium-Carbon Ferromanganese: (Mn 80-85%, C 1.5% max., Si 1.5% max.). Eastern Zone, carload, lump, bulk 16.5c per lb of contained Mn, carload packed 17.25c, ton lot 18.35c, less ton 19.55c; Central, add 0.3c for c.l. and 1.1c for l.c.l.; Western, add 0.7c for c.l. and 4.4c for l.c.l. Freight allowed. Spot, add 0.25c.

Manganese Metal: (Mn 96% min., Fe 2% max., Si 1% max., C 0.20% max.). Eastern Zone, carload, 2" x D, bulk 32c per lb of metal, carload packed 32.5c, ton lot 34c, less ton 36c; Central, add 1c for c.l. and 1.45c for l.c.l.; Western, add 1.45c for c.l. and 2.4c for l.c.l. Freight allowed. Spot, add 2c.

Silicomanganese: (Mn 65-70%). Eastern Zone, contract, lump, bulk, 1.50% C grade, 17-20% Si, 7.8c per lb of alloy, carload packed, 8.55c, ton lot 9.45c, less ton 10.45c; Central, add 0.25c for c.l. and 0.6c for l.c.l.; Western, add 0.8c for c.l. and 2.5c for l.c.l. Freight allowed. For 2.0% C grade, Si 15-17%, deduct 0.2c from above prices. Spot, add 0.25c.

CHROMIUM ALLOYS

High-Carbon Ferrochrome: Eastern Zone, contract, c.l., lump, bulk 18.6c per lb of contained Cr, c.l., packed 19.5c, ton lot 20.65c, less ton 22.05c; Central, add 0.4c for c.l. and 1.3c for l.c.l.; Western, add 0.55c for c.l. and 2.1c for l.c.l. Freight allowed. Spot, add 0.25c.

"SM" High-Carbon Ferrochrome: (Cr 60-65%, Si 4-6%, Mn 4-6%, C 4-6%). Add 1.1c to high-carbon ferrochrome prices.

Foundry Ferrochrome: (Cr 62-66%, C 5-7%). Eastern Zone, contract, c.l., 8MxD, bulk 20.1c per lb of contained Cr, c.l., packed 21.0c, ton lot 22.35c, less ton 24.1c; Central, add 0.4c for c.l. and 1.3c for l.c.l.; Western, add 0.55c for c.l. and 2.1c for l.c.l. Freight allowed. Spot, add 0.25c.

Low-Carbon Ferrochrome: (Cr 67-72%). Eastern Zone, contract, carload, lump, bulk, max. 0.03% C 28.5c per lb of contained Cr, 0.04% C 27.5c, 0.05% C 27.0c, 0.06% C 26.5c, 0.10% C 26.0c, 0.15% C 25.5c, 0.20% C 25.25c, 0.50% C 25.0c, 1% C 24.5c, 2% C 24.25c. Carload packed add 1.1c, ton lot add 2.2c, less ton add 3.9c; Central, add 0.4c for c.l. and 0.65c for l.c.l.; Western, add 0.5c for c.l. and 1.85c for l.c.l. Freight allowed. Spot, add 0.25c.

"SM" Low-Carbon Ferrochrome: (Cr 62-66%, Si 4-6%; Mn 4-6%, add C 1.25% max.). Eastern Zone, contract, carload, lump, bulk 25c per lb of contained chromium, carload, packed 26.1c, ton lot 27.3c, less ton 29.1c; Central, add 0.4c for c.l. and 0.65c for l.c.l.; Western, add 0.5c for c.l. and 1.85c for l.c.l. Freight allowed. Spot, add 0.25c.

Low-Carbon Ferrochrome, Nitrogen Bearing: Add 2c to 0.10% C low-carbon ferrochrome prices for approx. 0.75% N, Add 2c for each 0.25% of N above 0.75%.

Chromium Metal: (Mn. 97% Cr and 1% Fe). Eastern Zone, contract, carload, 1" x D, packed, max. 0.50% C grade, 93c per lb of contained chromium, ton lot 94.5c, less ton 97c; Central, add 1.5c for c.l. and 2.5c for l.c.l.; Western, add 2.75c for c.l. and 4.5c for l.c.l. Freight allowed. Spot, add 5c.

SILICON ALLOYS

50% Ferrosilicon: Eastern Zone, contract, carload, lump, bulk 9.3c per lb of contained Si, carload packed 10.9c, ton lot 12.35c, less ton 14.0c; Central, add 0.5c for c.l. and 1.25c for l.c.l.; Western, add 0.7c for c.l. and 1.8c for l.c.l. Freight allowed. Spot, add 0.45c.

Low-Aluminum 50% Ferrosilicon: (Al 0.40% max.) Add 1.3c to 50% ferrosilicon prices

75% Ferrosilicon: Eastern Zone, contract, carload, lump, bulk 11.8c per lb of contained Si, carload packed 13.1c, ton lot 14.25c, less ton 15.5c; Central, add 0.3c for c.l. add 0.75c for l.c.l.; Western, add 1.05c for c.l. and 5c for l.c.l. Freight allowed. Spot, add 0.3c.

85% Ferrosilicon: Eastern Zone, contract, carload, lump, bulk 13.3c per lb of contained, Si, carload packed 14.55c, ton lot 15.55c, less ton 16.7c; Central, add 0.3c for c.l. and 0.7c for l.c.l.; Western, add 1.05c for c.l. and 4.4c for l.c.l. Freight allowed. Spot, add 0.25c.

Low-Aluminum 85% Ferrosilicon: (Al 0.50% max.). Add 0.7c to 85% ferrosilicon prices.

90% Ferrosilicon: Eastern Zone, contract, carload, lump, bulk, 15c per lb of contained Si, carload packed 16.2c, ton lot 17.15c, less ton 18.2c; Central, add 0.3c for c.l. and 0.65c for l.c.l.; Western, add 1c for c.l. and 4c for l.c.l. Freight allowed. Spot, add 0.25c.

Low-Aluminum 90-95% Ferrosilicon: (Al 0.50% max.). Add 0.7c to above 90-95% ferrosilicon prices.

Silicon Metal: (Over 97% Si and 1% max. Fe). Eastern Zone, c.l., lump, bulk, regular 17.3c per lb of Si, c.l. packed 18.5c, ton lot 19.4c, less ton 20.4c; Central, add 0.6c for c.l. and 2.25c for l.c.l.; Western, add 1.2c for c.l. and 4c for l.c.l. Add 1c for max. 0.20% calcium grade. Add 1.5c for max. 0.10% calcium grade. Deduct 0.4c for max. 2% Fe grade analyzing over 96% Si. Spot, add 0.25c.

Alsifer: (Approx. 20% Al, 40% Si, 40% Fe) Contract basis fob Niagara Falls, N. Y., lump per lb c.l. 6.90c; ton lots packed, 7.40c; 200 to 1999 lb, 8.15c; smaller lots, 8.65c. Spot up 0.5c.

BRIQUETTED ALLOYS

Chromium Briquets: (Weighing approx. 3¾ lb each and containing exactly 2 lb of Cr). Eastern Zone, contract, carload, bulk, 12.5c per lb of briquet, carload packed 13.2c, ton lot 14.0c, less ton 14.9c; Central, add 0.25c for c.l. and 0.9c for l.c.l.; Western, add 0.35c for c.l. and 1.5c for l.c.l. Freight allowed. Add 0.25c for notching. Spot, add 0.25c.

Ferromanganese Briquets: (Weighing approx. 3 lb and containing exactly 2 lb of Mn). Eastern Zone, contract, carload, bulk, 8.7c per lb of briquet, c.l. packaged 9.5c, ton lot 10.3c, less ton 11.2c; Central, add 0.25c for c.l. and 0.6c for l.c.l.; Western, add 0.8c for c.l. and 2.5c for l.c.l. Freight allowed. Add 0.25c for notching. Spot, add 0.25c.

Silicomanganese Briquets: (Weighing approx. 3½ lb and containing exactly 2 lb of Mn and approx. ½ lb of Si). Eastern Zone, contract, c.l. bulk 8.75c per lb of briquet, c.l. packed 9.55c, ton lot 10.35c, less ton 11.25c; Central, add 0.25c for c.l. and 0.6c for l.c.l.; Western, add 0.8c for c.l. and 2.5c for l.c.l. Freight allowed. Add 0.25c for notching. Spot, add 0.25c.

Silicon Briquets: (Large size—weighing approx. 5 lb and containing exactly 2 lb of Si). Eastern Zone, contract, carload, bulk 5.1c per lb of briquet, c.l. packed 5.25c, ton lot 6.7c, less ton 7.6c. **(Small size**—weighing approx. 2½ lb and containing exactly 1 lb of Si). Eastern Zone, carload, bulk 5.25c, c.l. packed 6.05c, ton lot 6.85c, less ton 7.75c; Central, add 0.25c for c.l. and 0.6c for l.c.l.;Western, add 0.45c for c.l. and 0.9c for l.c.l. Freight allowed. Add 0.25c for notching, small size only. Spot, add 0.25c.

CALCIUM ALLOYS

Calcium-Manganese-Silicon: (Ca 16-20%, Mn 14-18%, and Si 53-59%). Eastern Zone, contract, carload, lump, bulk 17.50c per lb of alloy, carload packed 19.0c, ton lot 19.8c, less ton 20.8c; Central, add 0.5c for c.l. and 0.85c for l.c.l.; Western, add 2.55c for c.l. and 2.6c for l.c.l. Freight allowed. Spot, add 0.25c.

Calcium-Silicon: (Ca 30-33%, Si 60-65%, Fe 1.50-3%). Eastern Zone, contract, carload, lump, bulk 16.25c per lb of alloy, carload packed 16.45c, ton lot 19.35c, less ton 20.85c; Central, add 0.5c for c.l. and 0.75c for l.c.l.; Western, add 2.55c for c.l. and 2.90c for l.c.l. Freight allowed. Spot, add 0.25c.

VANADIUM ALLOYS

Ferrovanadium: Open Hearth Grade (Va 50-55%, Si 8% max., C 3% max.). Eastern Zone, contract, any quantity, $2.90 per lb of contained Va; Central, add 2c for c.l. and 3c for l.c.l.; Western, add 6c for c.l. and 9c for l.c.l. Freight allowed. Spot, add 10c. **Special Grade** (Va 50-55%, Si 4% max., C 1% max.), $3. **High Speed Grade** (Va 50-55%, Si 1.50% max., C .20% max.), $3.10.

Vanadium Oxide: All Zones, contract, less carload lots, $1.20 per lb of contained V_2O_5. Spot, add 5c.

Grainal: Vanadium Grainal No. 1, 93c; No. 6, 63c; No. 79, 45c; all fob Bridgeville, Pa., usual freight allowance.

TITANIUM ALLOYS

Ferrotitanium: (Ti 20-25%, Al 3% max., Si 4% max., C 0.10% max.). Eastern Zone, contract, ton lot, 2" x D, $1.35 per lb of contained Ti, less ton $1.40. (Ti 40-45%, Al 7% max., Si 4% max., C 0.10% max.). Ton lot $1.23, less ton $1.25; Central, add 4c for 20-25% Ti grade, and 2.1c for 40-45% grade; Western, add 13.5c for 20-25% Ti grade, and 7.2c for 40-45% grade. Freight allowed. Spot, add 5c.

Ferrotitanium, High-Carbon: (15-20%). Contract basis, per net ton, fob Niagara Falls, N. Y., freight allowed to destination east of Mississippi river and north of Baltimore and St. Louis, 6.8% C, $142.50; 3-5% C, $157.50.

TUNGSTEN ALLOYS

Ferrotungsten: (W 70-80%). Eastern Zone, contract, 10,000 lb W or more, $2.25 per lb of contained W; 200 lb W to 10,000 lb W, $2.35; less than 2000 lb W, $2.47. Spot, add 2c.

Tungsten Powder: (W 98.8% min.). Eastern Zone, contract or spot, 1000 lb or more, $2.90 per lb of contained W; less than 1000 lb W, $3.

ZIRCONIUM ALLOYS

12-15% Zirconium Alloys: (Zr 12-15%, Si 39-43%, Fe 40-45%, C 0.20% max.). Eastern Zone, contract, c.l., lump, bulk 6c per lb of alloy, c.l. packed 6.75c, ton lot 7.5c, less ton 8.35c; Central, add 0.25c for c.l. and 1.1c for l.c.l.; Western, add 0.6c for c.l. and 3.95c for l.c.l. Freight allowed. Spot, add 0.25c.

35-40% Zirconium Alloy: (Zr 35-40%, Si 47-52%, Fe 8-12%, C 0.50% max.). Eastern Zone, contract, carload, lump, packed 18.4c per lb of alloy, ton lot 19.15c, less ton 20.40c; Central, add 0.6c for c.l. and 1.05c for l.c.l.; Western add 3.05c for c.l. and 4c for l.c.l. Freight allowed. Spot, add 0.25c.

BORON ALLOYS

Ferroboron: (B 17.50% min., Si 1.50% max., Al 0.50% max., C 0.50% max.). Eastern Zone, contract, 100 lb or more. 1" x D, $1.20 per lb of alloy, freight allowed. Less than 100 lb $1.30; Central, add 0.75c; Western add 2.9c, freight allowed. Spot, add 5c

Borosil: (3 to 4% B, 40 to 45% Si). $6.2[illegible] per lb contained B, fob Philo, O., freight not exceeding St. Louis rate allowed.

Bortam: (B 1.5-1.9%). Ton lots, 45c per lb; smaller lots, 50c per lb.

Carbortam: (B 0.90 to 1.15%). Net ton to carload, 8c per lb, fob Suspension Bridge, N. Y., freight allowed same as high-carbon ferrotitanium.

OTHER FERROALLOYS

Ferrocolumbium: Cb 50-60%, Mn 5% max., Si 8% max., C 0.5% max.). Eastern Zone, contract, ton lot, 2" x D, $2.50 per lb of contained Cb, less ton $2.55; Central, add 1.65c; Western, add 6.45c. Freight allowed. Spot, add 10c.

CMSZ Mixes: No. 4—Cr 45-49%, Mn 4-6%, Si 18-21%, Zr 1.25-1.75%, C 3-4.5%; No. 5—Cr 50-56%, Mn 4-6%, Si 13.50-16.0%, Zr 0.75-1.25%, C 3.50-5%). Eastern Zone, carload, 12 M x D, carload packed 17.25c per lb of material, ton lot 18.00c, less ton 19.25c; Central, add 0.3c for c.l. and 1.1c for l.c.l.; Western, add 0.3c for c.l. and 3.05c for l.c.l. Freight allowed.

Silcaz Alloy: (Si 35-40%, Ca 9-11%, Al 6-8%, Zr 3-5%, Ti 9-11%, Boron 0.55-0.75%). Eastern Zone, carload, packed, 1" x D, 39c per lb of alloy, ton lot 41c, less ton 43c; Central, add 0.3c for c.l. and 1.1c for l.c.l.; Western, add 0.3c for c.l. and 3.05c for l.c.l. Freight allowed.

SMZ Alloy: (Si 60-65%, Mn 5-7%, Zr 5-7%, Fe 20% approx.). Eastern Zone, contract, carload, packed, ½" x 12 M, 15.0c per lb of alloy, ton lot 15.75c, less ton 17.0c; Central add 0.3c for c.l. and 1.1c for l.c.l.; Western, add 0.3c for c.l. and 3.05c for l.c.l. Freight allowed. Spot, add 0.25c.

Simanal: (Approx. 20% each Si, Mn, Al). Packed, lump, carload 10c, ton lots 10.25c, smaller lots 10.75c per lb alloy; freight not exceeding St. Louis rate allowed.

Ferrophosphorus: 17-19% based on 18% P content with unitage of $3 for each 1% of P above or below the base) Gross tons per carload fob sellers' works, with freight equalized with Rockdale, Tenn.; contract price $58.50, spot $62.25.

Ferromolybdenum: (55-75%). Per lb, contained Mo. fob Langeloth and Washington, Pa., furnace, any quantity 95.00c.

Platinum Price Rise Features Metal Markets

NEW YORK — Although platinum prices advanced $3 an ounce last week, all major nonferrous metal markets remained unchanged and quiet.

COPPER — Demand for copper continued well in excess of supplies but producers showed no inclination to revise price schedules. Electrolytic held at 21.50c, delivered Connecticut Valley.

PLATINUM — Price of platinum was advanced $3 an ounce, effective Mar. 2, by a leading refiner to the basis of $72 an ounce, New York, for bulk quantities and $75 in retail lots. The advance is attributed to scarcity due to absence of Russian platinum offerings coupled with outside buying of the metal as a hedge against inflationary trends.

LEAD — Production of refined lead increased 2055 tons in January to 51,392 tons, according to the American Bureau of Metal Statistics. Output from primary refineries increased to 47,421 tons from 45,538 tons in December while output from secondary sources increased to 3971 tons from 3799 tons. Shipping held fairly steady at 52,563 tons in January compared with 52,354 tons in the previous month while stocks dropped to only 20,616 tons from 21,787. Stocks of antimonial lead at the end of January totaled 6684 tons against 7921 tons at the end of December.

$3 advance attributed to increased scarcity. Major metal prices hold steady in quiet markets

January shipments were distributed to the various consuming industries as follows: Battery manufacturers, 10,968 tons; cable makers, 9843 tons; unclassified users, 22,870 tons.

A strike closed down American Smelting & Refining Co.'s large lead refinery in Monterrey, Mexico, last week. The refinery had been turning out about 12,500 tons of refined lead a month. American Metal Co. Ltd. has reached an agreement with workers at its Monterrey lead refinery which is turning out approximately 5000 tons a month.

Prices in the domestic market held unchanged in February and so far in March at 14.80c to 14.85c, East St. Louis.

ZINC—Shipments of zinc and zinc-base alloy castings increased 13 per cent in 1947 to 436,408,000 pounds compared with 384,701,000 pounds in 1946, according to the Bureau of the Census. Shipments increased 11 per cent in December to 37,218,000 pounds from 33,617,000 pounds in November while unfilled orders at the yearend amounted to 74,814,000 pounds compared with 88,052,000 pounds at the end of 1946.

TIN—Reconstruction Finance Corp. has purchased 4595 tons of pig tin against the interim allocation of 10,200 tons to the United States for the first half of 1948. The purchases included 4400 tons of grade A tin and 195 tons of lower grades.

ALUMINUM — Primary aluminum production increased 9 per cent in December to 47,589 tons from 43,461 tons in November, according to the Bureau of Mines. This brought the preliminary total for 1947 to 571,750 tons, a gain of about 40 per cent over the 1946 total of 409,630 tons, and established a new peacetime high. The December increase was made possible by the increased water flow which permitted the operation of additional facilities at some plants. Stocks of pig aluminum at primary reduction plants declined further to 15,549 tons at the yearend. Of the total of 15,580 tons of aluminum imported in 1947 only 1355 tons, or 9 per cent, were received during the second half of the year. Exports declined also in the second half, making the year's totals 12,098 tons of alloy ingot, slab, etc., and 50,051 tons of sheets, plates and strips.

Undertone of the market is firm at 15.00c for 99 per cent ingot.

NONFERROUS METAL PRICES

Copper: Electrolytic, carloads 21.50c, delivered Conn.; Lake, 21.62½c del. Conn. Dealers may add ¾c for 5000 lb to carload; 1c 1000-4999 lb; 1½c, 500-999 lb; 2c 0-499 lb. Casting, nom., refinery, 20,000 lb or more; nom., less than 20,000 lb.

Brass Ingot: 85-5-5-5 (No. 115) 18.50-19.25c; 88-10-2 (No. 215) 28.00c; 80-10-10 (No. 305) 24.25c; No. 1 yellow (No. 405) 14.50-16.00c; carlot prices, including 25c per 100 lb freight allowance; add ¼c for less than carloads.

Zinc: Prime western 12.00c, brass special 12.25c, intermediate 12.50c, E. St. Louis; high grade 13.00c, del., carlots. For 20,000 lb to carlots add 0.15c; 10,000-20,000 lb 0.25c; 2000-10,000 lb 0.4c; under 2000 lb 0.50c.

Lead: Common 14.80c-14.85c, chemical 14.90c, corroding 14.90c, E. St. Louis for carlots.

Primary Aluminum: 99% plus, ingots 15.00c del., pigs 14.00c del.; metallurgical 94% min. 13.50c del. Base 10,000 lb and over; add ½c 2000-9999 lb; 1c less through 2000 lb.

Secondary Aluminum: Piston alloy (No. 122 type) 16.50-16.75; No. 12 foundry alloy (No. 2 grade) 16.25-16.75c; steel deoxidizing grades, notch bars, granulated or shot: Grade 1 (95-97½%) 16.50-17.00c; grade 2 (92-95%) 16.00-16.50c; grade 3 (90-92%) 15.75-16.00c; grade 4 (85-90%) 15.25-15.50c. Above prices for 30,000 lb or more; add ¼c 10,000-30,000 lb; ½c 5000-10,000 lb; ¾c 1000-5000 lb; 1¼c less than 1000 lb. Prices include freight at carload rate up to 75c per 100 lb.

Magnesium: Commercially pure (99.8%) standard ingots (4-notch, about 20 lb), 10,000 lb and over, 20.50c, fob Freeport, Tex.; 2000 to 9999 lb, 21.50c; 100 to 1999 lb, 22.50c. Extruded rounds, 12 inches long, 1.312 inches in diameter, less than 25 lb, 52.00-56.00c; 25 to 99 lb. 42.00-46.00c; 100 to 4000 lb, 35.00-36.00c.

Tin: Prices ex-dock, New York in 5-ton lots. Add 1 cent for 2240-11,199 lb, 1½c 1000-2239, 2½c 500-999, 3c under 500. Grade A, 99.8% or higher (including Straits), 94.00c; Grade B, 99.8% or higher, not meeting specifications for Grade A, with 0.05% max. arsenic, 93.85c; Grade C, 99.65-99.79% incl. 93.50c; 99.00-99.64% 93.50c and 98.00-98.99%, 92.60c for tin content.

Antimony: American bulk carlots fob Laredo, Tex., 99.0% to 99.8% and 99.8% and over but not meeting specifications below, 33.00c; 99.8% and over (arsenic, 0.05% max.; other impurities, 0.1% max.) 33.50c. On producers' sales add ¼c for less than carload to 10,000 lb; ½c for 224-999 lb; add 2c for 223 lb and less; on sales by dealers, distributors, and jobbers add ½c, 1c, and 3c, respectively.

Nickel: Electrolytic cathodes, 99.9%, base sizes at refinery, unpacked 33.75c lb; 25 lb pigs produced from electrolytic cathodes 35.25c lb; shot produced from electrolytic cathodes 36.25c lb; "F" nickel shots or ingots for addition to cast iron 34.25c lb. Prices include import duty.

Mercury: Open market, spot, New York, $76-$78 per 76-lb flask.

Beryllium-Copper: 3.75-4.25% Be, $20.50 per lb contained Be.

Cadmium: Bars, ingots, pencils, pigs, plates, rods, slabs, sticks, and all other "regular" straight or flat forms $1.75 lb, del.; anodes, balls, discs and all other special or patented shapes, $1.80.

Cobalt: 97-98%, $1.65 lb for 550 lb (keg) $1.67 lb for 100 lb (case); $1.72 lb under 100 lb.

Gold: U. S. Treasury, $35 per ounce.

Silver: Open market, N. Y., 74.62½c, per ounce.

Platinum: $72-$75 per ounce.

Palladium: $24 per troy ounce.

Iridium: $85-$95 per troy ounce.

Rolled, Drawn, Extruded Products

Copper and brass product prices are fob mill, with freight prepaid on 200 lb or more.

Sheet: Copper 33.68c; yellow brass 30.16c; commercial bronze, 95% 33.80c, 90% 33.27c; red brass, 85% 32.23c, 80% 31.70c; best quality 31.09c; Everdur, Duronze, Herculoy or equiv., hot-rolled, 38.56c; nickel silver, 18%, 42.42c; phosphor bronze, grade A, 5%, 52.70c.

Rods: Copper, hot rolled 30.03c, cold drawn 31.03c; yellow brass, free cutting, 24.69c; commercial bronze, 95% 33.49c, 90% 32.96c; red brass, 85% 31.92c, 80% 31.39c; best quality 30.78c.

Seamless Tubing: Copper 33.72c; yellow brass 32.92c; commercial bronze 90% 35.68c; red brass 85% 34.89c, 80% 34.36c; best quality brass 33.50c.

Wire: Yellow brass 30.45c; commercial bronze, 95% 34.09c, 90% 33.56c; red brass, 85% 32.52c, 80% 31.99c; best quality brass 31.38c.

Copper Wire: Bare, soft, fob eastern mills, carlots 26.80c, less carlots 27.30c; weatherproof, fob eastern mills, carlots 27.35c, less carlots 27.85c; magnet, delivered, carlots 29.75c-31.13c, 15,000 lb or more 30.00c-31.38c, less carlots 30.50c-31.88.

Aluminum Sheets and Circles: 2s and 3s flats, mill finish, base 30,000 lb or more, fob shipping point. Actual transportation charges (not to exceed lowest carload rail freight rate) are deducted on orders for domestic delivery of 500 lb or more of one product to one destination. Widths from 12 in. and diameters from 9 in. to indicated maximum sizes. Prices, cents per lb, effective Jan. 30, 1947.

B. & S. Gage	Max. Width or Diam.	Sheet Base	Circle Base
0.0249"-7	48"	23.70	26.20
8-10	48"	24.20	26.70
11-12	26"	24.70	27.50
13-14	26"	24.90	27.90
15-16	26"	25.10	28.20
17-18	26"	25.40	28.60
19-20	24"	25.70	29.00
21-22	24"	26.10	29.50
23-24	24"	26.60	30.20
25	24"	27.10	30.90
26	24"	27.80	31.90
27	24"	28.50	33.00
28	24"	29.20	33.70
29	24"	30.00	34.70
30	24"	30.80	35.80

Lead Products: Prices to jobbers: Sheets, full rolls, 140 sq ft or more, 18.25c; add per hundredweight, 25c, 80 to 140 sq ft; 50c, 20 to 80 sq ft; 75c, 10 to 20 sq ft and circles. Pipe: Full coils 17.50c; cut coils 17.75c. Lead Traps and Bends: List plus 42%.

Zinc Products: Sheet, 16.50c-17.00c, fob mill, 36,000 lb and over. Ribbon zinc in coils, 15.25c-16.00c, fob mill, 36,000 lb and over. Plates, not over 12-in., 14.25c; over 12-in., 15.25c.

Plating Materials

Chromic Acid: 99.75%, flake, fob Philadelphia, carloads, 22.00c; 5 tons and over 22.50c; 1 to 5 tons, 23.00c; less than 1 ton, 23.50c.

Copper Anodes: Base, 2000 to 5000 lb; fob shipping point, freight allowed: Flat untrimmed, 30.59c; oval, 30.09c; electrodeposited, 29.84c; cast, 29.59c.

Copper Carbonate: 52-54% metallic Cu; 50 lb bags, 25.00c fob Cleveland.

Copper Cyanide: 70-71% Cu, 100-lb drums, 45.00c fob Cleveland.

Sodium Cyanide: 96-98%, ½-oz ball, in 100 or 200 lb drums, 1 to 400 lb, 16.00c, 500 lb and over, 15.00c, fob Cleveland; 1 cent less, fob Niagara Falls.

Nickel Anodes: Rolled oval, carbonized, carloads, 48.00c; 10,000 to 30,000 lb, 49.00c, 3000 to 10,000 lb, 50.00c; 500 to 3000 lb. 51.00c; 100 to 500 lb, 53.00c; under 100 lb, 56.00c; add 1 cent for rolled depolarized.

Nickel Chloride: 100-lb kegs, 23.50c; 275-lb bbls. 21.50c.

Tin Anodes: Bar, 1000 lb and over 110.00c; 500 to 1000 lb, 110.50c; 200 to 5000 lb, 111.00c; less than 200 lb, 112.50c; ball, 1000 lb and over, 112.25c; 500 to 1000 lb. 112.75c; 200 to 500 lb, 113.25c; less than 200 lb, 114.75c, fob Sewaren, N. J.

Tin Chloride: Fob Grasselli, N. J., 625 lb bbls., price on application.

Sodium Stannate: 25 lb cans only, less than 100 lb, to consumers and resellers, 67.4c; 100 or 300 lb drums only, 100 to 500 lb, to consumers 59.2c, to resellers 54.8c; 600 to 1900 lb, to consumers 56.8c, to resellers 52.5c; 2000 to 9900 lb, to consumers 55.0c, to resellers 50.9c; 10,000 lb or more l.c.l., to consumers 53.9c, to resellers 49.9c; carloads, to consumers 52.7c, to resellers 48.7c. Prices fob Sewaren, N. J.

Zinc Cyanide: 100-lb drums 36.00c, fob Cleveland; 35.00c, fob Niagara Falls.

Scrap Metals

BRASS MILL ALLOWANCES

(Based on 21.50c, Conn., for copper)

Prices for less than 15,000 lb fob shipping point. Add ⅝c for 15,000-40,000 lb; 1c for 40,000 or more.

	Clean Heavy	Rod Ends	Clean Turnings
Copper	19.125	19.125	18.375
Yellow brass	15.625	15.375	14.750
Commercial Bronze			
95%	18.125	17.875	17.375
90%	17.625	17.375	16.875
Red brass			
85%	17.500	17.250	16.750
80%	17.250	17.000	16.500
Best Quality (71-79%)	16.625	16.375	15.875
Muntz Metal	14.750	14.500	14.000
Nickel silver, 5%	16.500	16.250	8.250
Phos. bronze, A. B.	20.750	20.500	19.500
Naval brass	15.250	15.000	14.500
Manganese bronze	15.250	15.000	14.375

BRASS INGOT MAKERS BUYING PRICES

(Cents per pound, fob shipping point, carload lots)

No. 1 copper 17.50, No. 2 copper 16.50, light copper 15.50, composition red brass nom. 14.00, auto radiators 10.75, heavy yellow brass 10.25, brass pipe 11.00.

REFINERS' BUYING PRICES

(Cents per pound, delivered refinery, carload lots)

No. 1 copper 18.00-18.25, No. 2 copper 17.00-17.25, light copper, 16.00-16.25, refinery brass (60% copper), per dry copper content 15.75.

DEALERS' BUYING PRICES

(Cents per pound, New York, in ton lots or more)

Copper and Brass: Heavy copper and wire No. 1 16.00-16.50, No. 2 15.00-15.50, light copper 14.00-14.25, No. 1 composition red brass 11.50-12.00, No. 1 composition turnings 11.00-11.50, mixed brass turnings 7.00-7.25, new brass clippings 12.50-13.00, No. 1 brass rod turnings 10.00-10.50, light brass 6.00-6.25, heavy yellow brass 8.25-8.50, new brass rod ends 10.50-11.00, auto radiators, unsweated 9.25-9.50, cocks and faucets 9.25-9.50, brass pipe 9.00-9.25.

Lead: Heavy 12.00-12.50, battery plates 7.25-7.50, linotype and stereotype 14.50-15.00, electrotype 12.00-12.50, mixed babbitt 13.50-14.00, solder joints 16.50-17.00.

Zinc: Old zinc 5.50-5.75; new die cast scrap 4.75-5.25, old die cast scrap 2.75-3.25.

Tin: No. 1 pewter 60.00-62.00, block tin pipe 77.00-78.00, auto babbitt 45.00-47.00, No. 1 babbitt 45.00-48.00, siphon tops 45.00-47.00.

Aluminum: Clippings 2S 9.00-9.50, old sheets 7.00-7.50, crankcases 7.00-7.50, borings and turnings 2.50-3.00, pistons, free of struts, 6.00-6.50.

Nickel: Anodes 16.00-17.00, turnings 12.50-13.00, rod ends 16.00-17.00.

Monel: Clippings 12.00-12.50, turnings 7.00-7.25, old sheets 10.00-10.50, rods 10.00-10.50, castings 9.00.

DAILY PRICE RECORD

	Copper	Lead	Zinc	Tin	Aluminum	Antimony	Nickel	Silver
January Average:	21.500	14.825	11.056	94.000	15.000	33.000	33.750	74.625
Feb. Average ..	21.500	14.825	12.000	94.000	15.000	33.000	33.750	74.625
Mar. 1-4	21.500	14.80-14.85	12.000	94.000	15.000	33.000	33.750	74.625

NOTE: Copper: Electrolytic, del. Conn. Valley; Lead, common grade, del. E. St. Louis; Zinc, prime western, del. St. Louis; Tin, Straits, del. New York; Aluminum, primary ingots, 99%, del.; Antimony, bulk, fob Laredo, Tex.; Nickel, electrolytic cathodes, 99.9%, base sizes at refinery, unpacked; Silver, open market, New York. Prices, cents per pound; except silver, cents per ounce.

OPEN MARKET PRICES, IRON AND STEEL SCRAP

Prices are dollars per gross ton, including broker's commission, delivered at consumer's plant except where noted.

PITTSBURGH

No. 1 Heavy Melt. Steel	$40.00-40.50*
No. 2 Heavy Melt. Steel	40.00-40.50*
No. 1 Busheling	40.00-40.50*
Nos. 1, 2 and 3 Bundles	40.00-40.50*
Machine Shop Turnings	36.00-36.50
Mixed Borings, Turnings	36.00-36.50
Short Shovel Turnings.	37.00-37.50
Cast Iron Borings	37.00-37.50
Bar Crops and Plate	47.50-48.00
Low Phos. Steel	47.50-48.00
Heavy Turnings	40.00-40.50

Cast Iron Grades

No. 1 Cupola	61.00-62.00
Charging Box Cast	45.00-47.00
Heavy Breakable Cast.	46.00-47.00
Unstripped Motor Blocks	52.00-53.00
Malleable	69.00-70.00
Brake Shoe	52.00-53.00
Clean Auto Cast	58.00-59.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	41.00-41.50
R.R. Malleable	75.00-80.00
Axles	51.50-52.00
Rails, Rerolling	56.00-57.00
Rails, Random Lengths	53.00-54.00
Rails, 3 ft and under	57.50-58.50
Rails, 18 in. and under	58.50-59.50
Railroad Specialties	54.00-55.00
Uncut Tires	52.00-52.50
Angles, Splice Bars	53.00-54.00

*Plus applicable freight springboard.

CLEVELAND

No. 1 Heavy Melt. Steel	$39.50-40.00*
No. 2 Heavy Melt. Steel	39.50-40.00*
No. 1 Busheling	39.50-40.00*
Nos. 1 & 2 Bundles	39.50-40.00*
Machine Shop Turnings	34.50-35.00
Mixed Borings, Turnings	34.00-36.00
Short Shovel Turnings.	35.50-36.00
Cast Iron Borings	35.50-36.00
Bar Crops and Plate	44.50-45.00
Punchings & Plate Scrap	44.50-45.00
Heavy Turnings	39.50-40.50
Alloy Free Turnings	37.50-38.50
Cut Structurals	46.00-49.00

*Plus applicable freight springboard.

Cast Iron Grades

No. 1 Cupola	70.00-72.00
Charging Box Cast	60.00-62.00
Stove Plate	60.00-62.00
Heavy Breakable Cast.	56.00-58.00
Unstripped Motor Blocks	60.00-62.00
Malleable	75.00-80.00
Brake Shoes	54.00-55.00
Clean Auto Cast	70.00-72.00
No. 1 Wheels	60.00-62.00
Burnt Cast	58.00-59.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	40.50-41.50*
R.R. Malleable	75.00-80.00
Rails, Rerolling	58.00-60.00
Rails, Random Lengths	59.00-60.00
Rails, 3 ft and under	63.00-65.00
Cast Steel	56.00-58.00
Railroad Specialties	53.00-55.00
Uncut Tires	56.00-57.00
Angles, Splice Bars	59.00-60.00

*Plus applicable freight spring board.

VALLEY

No. 1 Heavy Melt. Steel	40.00-40.50*
No. 2 Heavy Melt. Steel	40.00-40.50*
No. 1 Bundles	40.00-40.50*
Machine Shop Turnings	34.50-35.50
Short Shovel Turnings.	36.50-37.00
Cast Iron Borings	36.00-36.50
Low Phos.	46.00-47.50

*Plus applicable freight springboard.

Railroad Scrap

No. 1 R.R. Heavy Melt.	40.50-41.50*

*Plus applicable freight spring board.

MANSFIELD

Machine Shop Turnings	$35.00-35.50
Short Shovel Turnings.	37.00-37.50

CINCINNATI

No. 1 Heavy Melt. Steel	$39.50
No. 2 Heavy Melt. Steel	39.50
No. 1 Busheling	39.50
No. 1 Bundles	39.50
No. 2 Bundles	39.50
Machine Shop Turnings	33.50
Mixed Borings, Turnings	32.50
Short Shovel Turnings.	35.50
Cast Iron Borings	34.50

Cast Iron Grades

No. 1 Cupola Cast	55.00
Charging Box Cast	43.00
Heavy Breakable Cast.	50.00
Stove Plate	47.00
Unstripped Motor Blocks	45.00
Brake Shoes	45.00
Clean Auto Cast	55.00
Drop Broken Cast	60.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	40.50
R.R. Malleable	68.00
Rails, Rerolling	53.00
Rails, Random Lengths	50.00
Rails, 18 in. and under	60.00

DETROIT

(Dealers buying prices, fob shipping point)

No. 1 Heavy Melt. Steel	$35.00-35.50
No. 1 Busheling	35.00-35.50
Nos. 1 & 2 Bundles	35.00-35.50
No. 3 Bundles	35.00-35.50
Machine Shop Turnings	29.00-29.50
Mixed Borings Turnings	29.00-29.50
Short Shovel Turnings.	30.00-30.50
Cast Iron Borings	30.00-30.50
Punchings & Plate Scrap	40.00-40.50

Cast Iron Grades

No. 1 Cupola Cast	60.00-62.00
Heavy Breakable Cast.	50.00-52.00
Clean Auto Cast	62.00-65.00

BUFFALO

No. 1 Heavy Melt. Steel	$43.00-45.00
No. 2 Heavy Melt. Steel	39.75-40.25
No. 1 Busheling	39.75-40.25
No. 1 & 2 Bundles	39.75-40.25
Machine Shop Turnings	35.25-36.75
Mixed Borings, Turnings	35.25-36.75
Cast Iron Borings	36.25-36.75
Short Shovel Turnings.	36.25-36.75
Low Phos.	46.00-47.00

Cast Iron Grades

No. 1 Cupola	60.00-62.00
Mixed Cupola	58.00-60.00
Heavy Breakable Cast.	55.00-57.00
Malleable	70.00-75.00
Clean Auto Cast	62.00-64.00

Railroad Scrap

Rails, 3 ft. and under.	54.00-55.00
Railroad Specialties	55.00-56.00

PHILADELPHIA

No. 1 Hvy. Melt. Steel	$41.50
No. 2 Hvy. Melt. Steel	39.00
No. 1 Busheling	39.00
No. 1, No. 2 Bundles	39.00
No. 3 Bundles	37.00
Machine Shop Turnings	34.00-35.00
Mixed Borings, Turnings	34.00-35.00
Short Shovel Turnings.	36.00
Bar Crop and Plate	45.00-46.00
Punchings & Plate Scrap	45.00-46.00
Cut Structurals	45.00-46.00
Elec. Furnace Bundles	43.50-44.50
Heavy Turnings	42.50-43.00
No. 1 Chemical Borings	42.00-43.00

Cast Iron Grades

No. 1 Cupola Cast	63.00-64.00
No. 1 Machinery Cast.	65.00-66.00
Charging Box Cast	59.00-60.00
Heavy Breakable Cast.	59.00-60.00
Unstripped Motor Blocks	52.00-53.00
Malleable	74.00-76.00
Clean Auto Cast	63.00-64.00
No. 1 Wheels	64.00-65.00

NEW YORK

(Brokers buying prices, fob shipping point)

No. 1 Heavy Melt. Steel	$34.03
No. 2 Heavy Melt. Steel	34.03
No. 1 Busheling	34.03
Nos. 1 & 2 Bundles	34.03
No. 3 Bundles	32.03
Machine Shop Turnings	28.50-29.00
Mixed Borings, Turnings	28.50-29.00
Short Shovel Turnings.	30.50-31.00
Punchings & Plate Scrap	39.00-40.00
Cut Structurals	39.00-40.00
Elec. Furnace Bundles.	39.00-40.00

Cast Iron Grades

No. 1 Cupola Cast	58.00-60.00
Charging Box Cast	58.00-60.00
Heavy Breakable	58.00-60.00
Unstripped Motor Blocks	52.00-54.00
Malleable	68.00-69.00

BOSTON

(Fob shipping point)

No.1 Heavy Melt. Steel	$31.40-31.90
No. 2 Heavy Melt. Steel	31.40-31.90
No. 1 Bundles	31.40-31.90
No. 1 Busheling	31.40-31.90
Machine Shop Turnings	26.90
Mixed Borings, Turnings	27.00-28.00
Short Shovel Turnings.	28.90
Bar Crops and Plate	37.00
Punchings & Plate Scrap	37.00
Chemical Borings	34.00-35.00

Cast Iron Grades

No. 1 Cupola Cast	60.00-65.00
Heavy Breakable Cast.	58.00-60.00
Stove Plate	55.00-57.00
Unstripped Motor Blocks	45.00-46.00
Clean Auto Cast	53.00-55.00

CHICAGO

No. 1 Heavy Melt. Steel	$38.00-39.50
No. 2 Heavy Melt. Steel	37.00-37.50
No. 1 Bundles	38.00-39.50
No. 2 Bundles	37.00-37.50
No. 3 Bundles	35.00-35.50
Machine Shop Turnings	33.00-34.50
Mixed Borings, Turnings	33.00-34.50
Short Shovel Turnings.	35.00-36.50
Cast Iron Borings	34.00-35.50
Bar Crops and Plate	45.50-47.00
Punchings	49.00-50.50
Elec. Furnace Bundles.	39.00-40.50
Heavy Turnings	37.50-39.00
Cut Structurals	43.00-44.50

Cast Iron Grades

No. 1 Cupola Cast	65.00-67.00
Clean Auto Cast	62.00-65.00
No. 1 Wheels	53.00-56.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	41.00-41.50
Malleable	70.00-71.00
Rails, Rerolling	49.50-50.00
Rails, Random Lengths	46.00-47.00
Rails, 3 ft and under.	55.00-56.00
Rails, 18 in. and under	57.00-58.00
Railroad Specialties	49.00-50.00
Angles, Splice Bars	51.00-52.00

ST. LOUIS

No. 1 Heavy Melt. Steel	$39.50-40.50
No. 2 Heavy Melt. Steel	37.50-38.50
Machine Shop Turnings	32.50-33.50
Short Shovel Turnings.	34.50-35.50

Cast Iron Grades (Fob shipping point)

No. 1 Cupola Cast	60.00-65.00
Mixed Cast	60.00-62.00
Heavy Breaklable Cast.	53.00-55.00
Brake Shoes	54.00-55.00
Clean Auto Cast	64.00-66.00
Burnt Cast	58.00-59.00

Railroad Scrap

R.R. Mealleable	65.00-70.00
Rails, Rerolling	54.00-55.00
Rails, Random Lengths	52.00-53.00
Rails, 3 ft and under	57.00-60.00
Uncut Tires	46.00-47.00
Angles, Splice Bars	46.00-48.00

BIRMINGHAM

No. 1 Heavy Melt. Steel	$37.00
No. 2 Heavy Melt. Steel	37.00
No. 1 Busheling	37.00
Nos. 1 & 2 Bundles	37.00
No. 3 Bundles	31.00
Long Turnings	24.50
Short Shovel Turnings.	26.00-27.00
Cast Iron Borings	25.00
Bar Crops and Plate	38.50
Cut Structurals	38.50

Cast Iron Grades

No. 1 Cupola Cast	51.00
Stove Plate	43.00
No. 1 Wheels	45.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	38.00
R.R. Malleable	45.00
Axles, Steel	39.00
Rails, Rerolling	52.00
Rails, Random Length	39.00
Rails, 3 ft and under	41.00
Angles and Splice Bars	41.00

SAN FRANCISCO

No. 1 Heavy Melt. Steel	*$25.00
No. 2 Heavy Melt. Steel	*25.00
No. 1 Busheling	*25.00
Nos. 1 & 2 Bundles	*25.00
No. 3 Bundles	*20.00
Machine Shop Turnings	*15.50
Bar Crops and Plate	25.00
Cast Steel	25.00
Alloy Free Turnings	15.50
Cut Structurals	25.00
Tin Can Bundles	20.00

Railroad Scrap

No. 1 Heavy Melting	26.00
Axles	32.00
Rails, Random Lengths	26.50
Uncut Tires	33.50

* Fob California shipping point.

SEATTLE

No. 1 Heavy Melt. Steel	$24.00
No. 2 Heavy Melt. Steel	24.00
No. 1 Busheling	24.00
Nos. 1 & 2 Bundles	22.00
No. 3 Bundles	22.00
Machine Shop Turnings	14.50
Mixed Borings, Turnings	14.50
Punchings & Plate Scrap	24.50
Cut Structurals	24.50

Cast Iron Grades

No. 1 Cupola Cast	40.00
Charging Box Cast	25.00
Heavy Breakable Cast.	24.00
Stove Plate	25.50
Unstripped Motor Blocks	24.00
Malleable	30.00
Brake Shoes	30.00
Clean Auto Cast	30.00
No. 1 Wheels	26.50

Railroad Scrap

No. 1 R.R. Heavy Melt.	22.00
Railroad Malleable	30.00
Rails, Random Lengths	21.50
Angles and Splice Bars	23.00

LOS ANGELES

No. 1 Heavy Melt. Steel	$25.00
No. 2 Heavy Melt. Steel	25.00
Nos. 1 & 2 Bundles	25.00
Machine Shop Turnings	16.00
Mixed Borings, Turnings	15.50-16.00
Punchings & Plate Scrap	28.00
Elec. Furnace Bundles.	28.00

Cast Iron Grades

No. 1 Cupola Cast	35.00-36.00

HAMILTON, ONT.

(Ceiling prices, delivered)

Heavy Melting	$22.00
No. 1 Bundles	22.00
Mechanical Bundles	20.00
Mixed Steel Scrap	19.00
Mixed Borings, Turnings	17.00
Rails, Remelting	28.00
Rails, Rerolling	26.00
Bushelings	17.00
Bushelings, new factory, prep'd	21.00
Bushelings, new factory, unprep'd	16.00
Short Steel Turnings	17.00

Cast Iron Grades*

No. 1 Cast	42.00-48.00
No. 2 Cast	35.00-37.00

* Removed from price control Aug. 9, 1947; quoted on basis of fob shipping point.

Sheets, Strip . . .

Continental raises hot-rolled sheets $8 a ton; revises some other items

Sheet Prices, Page 162

Kokomo, Ind. — Continental Steel Corp., this city, has advanced prices, effective as of Feb. 26, on certain flat-rolled products as follows: Hot-rolled sheets, 19 gage and lighter, annealed, $8 a ton from 3.85c a pound to 4.25c; galvanized sheets $10 a ton to the basis of 4.55c a pound from 4.05c on the basis of 10-gage; and culvert sheets, No. 16 flat, copper alloy, $5 a ton to 4.90c a pound from 4.65c. The company states that these are all low-tonnage items on which all through 1947 and currently it has sold at a loss. The company continues to list electrical sheets of field, armature and electrical grades at unchanged prices but has virtually discontinued production of field and armature grades.

Cleveland — Demand for carbon sheet and strip continues relentlessly. Likewise demand for ingots for conversion is unabated, and as long as such is the case no easing in pressure for sheet and strip is anticipated. Producers and consumers are expressing concern over the possibility a coal miners' strike will interrupt the flow of steel.

Chicago—Acme Steel Co. advanced commercial hot and cold-rolled strip $6 and $8 a ton, respectively, effective Feb. 25. Hot strip was raised from 2.80 cents a pound to 3.10 cents, and cold rolled from 3.65 cents to 4.05 cents, Chicago base. Company states the increases were made to compensate for the advance in semifinished steel.

Demand for sheets and strip appears to be as strong as ever, but each week develops more evidence that manufacturers of some lines of goods are facing receding backlogs. Should this trend continue or accelerate, the condition will eventually back up to mill level, and the transition could take place quickly. Among signs that pipelines of supply may be filling up are that several refrigerator makers have filed bankruptcy proceedings, some washing machine producers have canceled orders for parts, dairy equipment lines are experiencing declining demand, and certain types of building operations are falling off. Sheet and stripmakers have felt none of these things as yet. Furthermore, there has been little lessening of pressure for conversion steel, although it is understood consumers are considering some cutbacks in the mill space allotted to them.

New York — Demand for stainless steel sheets continues to improve. Most sellers now have little to offer under ten weeks and in certain instances are quoting 12 to 13 weeks. Recent operating difficulties are a factor, but improvement in demand also is a factor. Automotive requirements are expanding and are affecting deliveries here. Demand from manufacturers of restaurant and kitchen equipment is improving.

A particularly active demand for enameling stock is noted, especially from stove makers and manufacturers of refrigerators, deep freeze units, light reflectors and so forth.

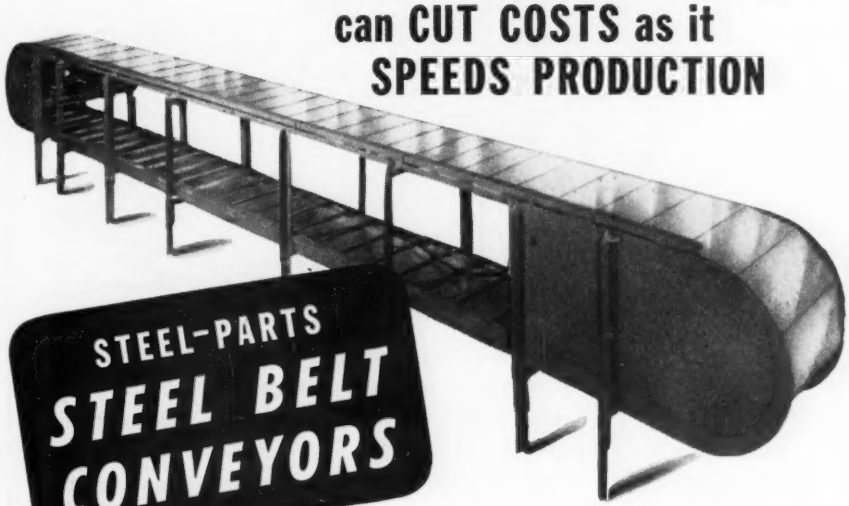
No let-up is noticeable in the pressure for hot and cold sheets, with consumers likely to get a little more tonnage in the second quarter, including arrearages which have been carried over from present period. Mill operations in the second quarter should improve. However, most consumers are still concerned about the possible effects of the voluntary allocation program, if and when it becomes operative on the basis of the schedule now outlined. Under the circumstances, consumers are not too sure that even the quotas they have already received will not be curtailed before the next quarter is over.

Boston — Demand for flat-rolled carbon steel is well in excess of supply with no indication of easing in the near future. Some consumers are operating contrary to the trend; a leading user of electrical sheets held up shipments on part of first quarter quota and an appliance manufacturer has turned back some cold-rolled tonnage. Some of the postwar new product programs have petered out, affecting consumer ideas as to steel supply, but these are isolated cases having little influence on the overall demand. This tonnage is readily diverted to other users.

A few cold strip producers outside this territory have advanced prices up to $10 a ton, but most producers are watching the hot strip trend before acting. There is no improve-

BE SKEPTICAL!

Make us PROVE this conveyor can CUT COSTS as it SPEEDS PRODUCTION



STEEL-PARTS STEEL BELT CONVEYORS

Yes, we stand ready to present positive proof that conveyorized handling with Steel-Parts STEEL BELT Conveyor will slash costs — step-up production. Mr. H. W. Ziegler, Factory Supt., at the Ed Roos Co., reports efficiency up 30% . . . unit cost down 10% . . . machine capacities increased 65%! And that's only one among dozens of reports testifying to the amazing results obtained with durable, rugged all-steel conveyors, pre-engineered at the factory for your specific job. Let Steel-Parts engineers make recommendations to increase the efficiency of your materials handling methods. Mail the coupon below . . . today.

GET THE COMPLETE STORY Mail This Coupon Today

STEEL-PARTS MANUFACTURING CO.
DIVISION OF BLACKSTONE MANUFACTURING COMPANY

STEEL-PARTS MFG. CO.
218 S. Morgan St., Chicago, III.

Please send me complete information including engineering data and specifications on your Steel-Belt Conveyors.

Please have your representative call to discuss our specific materials handling problems.

NAME_____ POSITION_____

FIRM_____ ADDRESS_____

CITY_____ STATE_____

ment in the outlook for hot strip with high carbon becoming tighter. Cold strip schedules are filled for second quarter and only failure of users to take up allocations will make for any openings.

Philadelphia—While there has been a falling off in demand for stoves, sheet sellers report there has been little easing in demand for enameling stock from stove makers so far. In fact, pressure for enameling stock in general appears to be as strong as ever.

Pittsburgh — Output of silicon sheets is expected to be substantially increased, perhaps up to 50 per cent, at the Vandergrift plant of Carnegie-Illinois Steel Corp. over the coming months, reflecting installation of a 54-inch 1500 feet per minute cold reduction mill capable of handling 15,000-pound coils; three continuous annealing furnaces; and auxiliary slitting, shearing, temper rolling and other modern steelmaking facilities. The sheet bar portion of the blooming and bar mill, five roughing mills, one finishing mill and one of the plant's five galvanizing lines are being discontinued. The slabs produced at Vandergrift are converted into coils in company's Irvin Works.

Youngstown, O. — Niles Rolling Mill Co. has boosted its prices of hot-rolled, galvanized, enameling and electrical sheets $10 a ton to the following levels: Hot-rolled, 19 gage and lighter, annealed sheets, 4.15c, Youngstown; No. 10 galvanized sheets, 4.45c, Youngstown; No. 12 enameling sheets, 4.45c, Youngstown; No. 24 electrical sheets, 5.80c and armature, 5.30c, Pittsburgh.

J. A. Roemer, president of the company, said the boost was not related to recent boosts in semifinished steel prices because it is supplied with semifinished by its parent company, Sharon Steel Corp., and is not related to any other recent increases. He said it merely reflects recent increases in the company's production costs. He said costs went up so much that it was selling some items below cost and others at bare cost. The plant is a mechanized hand mill, producing about 125,000 tons of hot-rolled sheets yearly, and now is engaged in building a large addition.

Cincinnati — Mills have not yet announced second quarter allotments of sheets but these may result in disappointments because of the heavier carryover due to loss of tonnage during the severe cold weather last month. Demand shows no slackening whatsoever. Mill interests profess that they lack insight into the third quarter situation, and are following custom of accepting orders only quarter to quarter.

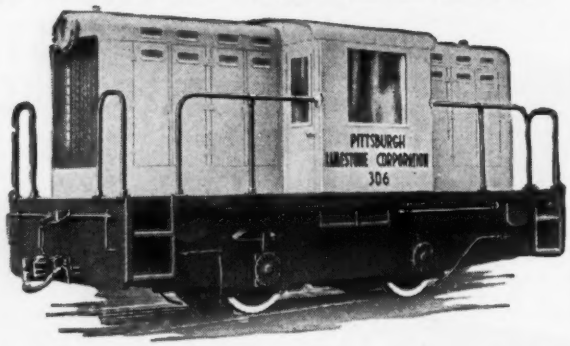
Birmingham — Sheets and strip continue in tight supply. Little or nothing is heard of cancellations in this territory. On the other hand, pressure for delivery of tonnage due under quotas continues. Tin plate production, as has been the case for several years, continues to take a large proportion of the district's sheet output.

St. Louis — Sheet production continues to rise with Granite City Steel Co.'s new cold reduction mill increasing operations gradually. Demand is unabated, augmented occasionally by fabricators who have given up hope of obtaining scarcer items like pipe and have shifted to products requiring sheet or strip. Farm machinery demand also is on the upgrade. Granite City still is not operating at furnace capacity, with six of 13 open hearths off. Until the reduction mill runs at full speed, finishing will remain the bottleneck. Order books have been kept closed pending completion of adjustments to the equipment. For that reason, it remains current on deliveries.

Seattle — Gray market operations in this area are confined almost entirely to sheets which for months have been the most acutely short. Brokers in Los Angeles are advertising and circularizing local plants offering 10, 11, 12 and 13 gage hot-rolled prime sheets, standard sizes and other lighter gages in hot-rolled, cold-rolled, galvanized and strip, subject to prior sale. This material is being offered at 11.00c and higher for 12 gage; 15.00c and higher for 26 gage galvanized. Many smaller shops have paid these premium prices, the situation in this respect being largely similar to that disclosed by evidence here last July before a special U. S. Senate committee.

One local firm, manufacturing hot water tanks and heaters and using large tonnages of sheets, reports that gray market offerings, some of them from war surplus stocks, are not standard sizes and result in larger wastage, in some cases as much as 10 per cent. This firm is using a larger proportion of aluminum, which also is tight and sold only on allotment. This firm is operating only one-third of capacity.

FITTED POWER
Gives BEST RESULTS



DAVENPORT LOCOMOTIVES

DAVENPORT
BETTER-BUILT
LOCOMOTIVES
are
AVAILABLE
in
STEAM
GASOLINE
DIESEL
with
ELECTRIC
or
MECHANICAL
DRIVE

COMPLETE INFORMATION ON REQUEST

Industrial haulage is no exception. Every rail operation is different. Length and frequency of trips; grades, curves, condition of rails; condition and kind of cars; size of loads—all these are pertinent and can lead to but one conclusion: For best results your haulage power unit should be FITTED to your particular haulage operation.

We Help You to KNOW

Our engineers have prepared a new Haulage Survey Data Sheet which you can use to prepare an accurate and complete description of your rail conditions, rolling stock used, and work to be done. Send us this description and we will tell you exactly the most suitable size and type of locomotive best suited to YOUR requirements. There's no obligation.

Write Us TODAY

EXPORT OFFICE
BROWN AND SITES CO., INCORPORATED
50 Church St., New York 7
Cable Address "BROSITES"

DAVENPORT LOCOMOTIVE WORKS
A DIVISION OF DAVENPORT BESLER CORPORATION, DAVENPORT, IOWA

Structural Shapes . . .

Lack of uniformity reported in extra card revisions. Some makers take no action

Structural Shape Prices, Page 163

Pittsburgh — The recent revision in extras on structural shapes announced by Carnegie-Illinois Steel Corp. has not been followed by all other producers. Up to late last week Bethlehem Steel Co, the only commercial producer in the East, had taken no action. Another eastern producer. Phoenix Iron Co., is not rolling for the general trade.

At Pittsburgh the only producer there other than Carnegie-Illinois to change shape extras was Jones & Laughlin Steel Corp.

In the Chicago district Carnegie-Illinois, Inland Steel Co. and Wisconsin Steel Co., an affiliate of the International Harvester Co., are the only producers of shapes there. Inland increased its extras effective Feb. 23 and these were uniform with those announced by Carnegie within the ranges it rolls. Wisconsin Steel makes only smaller shapes mostly for use by the Harvester company, selling as little as possible in the open market. It has made no change in its extra card.

In the West, the Colorado Fuel & Iron Corp., Denver, announced it has made no change in extras on structurals but that its future plans are undecided.

Boston — On the entire superstructure of the Mystic River bridge, involving 32,000 tons, American Bridge Co. of Pittsburgh is low; if the contract is let by divisions, Bethlehem Steel Co. and American Bridge Co. will share the tonnage, getting about 17,000 tons and 15,000 tons, respectively. Bethlehem is low on division 9A, Charlestown approach, and on division 3D, Chelsea approach, while American Bridge is low on the bridge spans, division 3B, Little Mystic river crossing, and division 3C, Big Mystic river crossing. Plans include 727,000 square feet of steel grid flooring, largest tonnage of the material ever required for a New England project.

American Bridge Co.'s quotation for the entire structure is only about $80,000 higher than the total divisional estimates, the superstructure to cost around $11 million.

Seasonal inquiry for private construction is developing rather slowly.

New York — Structural activity continues to decline, fewer new inquiries being figured than at any time in weeks. Seasonal influences have some bearing, but uncertainty as to costs is the major factor. If stability were assured, more work would go ahead, but the break in the commodities market last month, along with indications that business in general is becoming more competitive, is resulting in hesitancy in some quarters. Three projects have been placed in this district recently ranging from 1000 to 1900 tons, but most other contracts range from 100 to 400 tons. New inquiry involves relatively small lots.

Philadelphia — Structural steel activity continues to lag, due in part to seasonal influence. Uncertainty with respect to cost trends has delayed some projects.

Birmingham — Shape inquiry has improved recently. However, not much actual tonnage is being booked.

Seattle — Mill price increases have upset calculations of local fabricators who have had to revise their contract prices. Second quarter allocations continue far below demands and plants are making commitments only for stocks available. Construction of schools, small industrial plants and similar work involves considerable tonnage each in small lots of less than 100 tons. No major jobs involving structurals are pending. Fabricators report no gray market in shapes as they are obtaining their limited allocations from regular sources.

Reinforcing Bars . . .

Reinforcing Bar Prices, Page 162

Seattle — Several major building projects involving sizable tonnages of reinforcing bars will be up for bids in the immediate future. Local rolling mills report a steady stream of small orders for less than 50 tons each involved in schools, commercial and industrial construction. Present objective is to reduce backlogs. Operations are at capacity.

There is little evidence of a gray market here in reinforcing and merchant bars. As a rule the mills have been able to care for regular customers and there has been small incentive to look elsewhere for ma-

ROLL THREAD DIES

manufactured by

ÆROLL ENGINEERING CORP.

18511 EUCLID AVENUE • CLEVELAND 12, OHIO

These fine roll thread dies, manufactured to exact specifications, will make more high quality threads per die. Our engineering department is available to help you with advice and suggestions. Inquiries receive prompt attention. Deliveries are made with strict attention to schedule. For immediate information, telephone

IVANHOE: 2266

terials. In isolated cases, contractors in Alaska with rush jobs on hand, are reported to have purchased a comparatively small tonnage from outside suppliers. There is no indication of what premium was paid.

Tubular Goods . . .

Tubular Goods Prices, Page 163

New York — Steel pipe requirements for gas lines continue to broaden, impetus to demand having resulted from the recent gas shortages. Total natural gas pipe line projects authorized from July 1, 1945, to Jan. 15, 1948, and pending authorization by the Federal Power Commission on Jan. 15, involve 20,922 miles and an estimated tonnage of 4,970,000, according to recent compilation by the Gas Appliance Manufacturing Association Inc., this city. Projects pending authorization on Jan. 15, amounted to 11,396 miles and an estimated tonnage of 3,002,900; lines authorized during the period July 1, 1945, to Jan. 15, 1948, involve 9596 miles and 1,967,100 tons.

Natural gas pipe lines authorized and completed or in operation on Jan. 15, amounted to 4173 miles and 807,200 tons, while projects authorized during the period but as yet not completed involve 5423 miles and approximately 1,159,900 tons.

These estimated tonnages are only a part of the requirements which will be eventually needed for auxiliary lines, and so forth. This is also true as to pipe requirements of the manufactured, mixed and liquefied petroleum gas industry.

Applications pending approval of the Federal Power Commission as of Jan. 15, this year for major natural gas construction, include 1939 miles of 26-inch transmission line for the Trans-Continental Pipe Line Co., 1016 miles of 24-inch line for the Memphis Natural Gas Co., 1159 miles of 26-inch line for the United Gas Corp., 1756 miles of pipe ranging from 16 to 30 inches for the Tennessee Gas & Transmission Co., 1159 miles of 16-inch trunk line for the Southern Natural Gas Co.

Boston — With renewed activity in the construction field just ahead, more critical shortages in steel pipe loom. Wrought and cast iron pipe is now being used for purposes normally taking steel pipe. Distributor stocks are low and with few exceptions mills are behind on merchant steel pipe deliveries. Pipe fabricating shops, overcommitted based on current allocations, are seeking more pipe, although in most cases this type of consumer is receiving more tonnage than the base period allotment schedules cover. Utilities are asking for two and three times more pipe than before the war. A steady improvement in stainless, pipe sizes, is developing in this area, notably from the paper making industry.

Pittsburgh — Some tightening in delivery schedules is noted for both stainless and alloy tubing, while no easing in pressure for shipments of standard pipe and bulk of oil country goods is indicated through most of this year. Pipe producers in this area lost considerable production during the first two months this year, further accentuating the already critical tight supply situation in tubular products. Pittsburgh Steel Co. did not raise its prices on oil country goods in line with the action taken by industry members the past few weeks. Prior to the recent industry price advance on casing, drill pipe, and oil well tubing, Pittsburgh Steel was quoting about a 9 per cent average high price. On some sizes their quotations were below, equal to, or above that generally quoted by the industry.

St. Louis — Demand for pipe remains high, with prospects it will get worse when the residential and commercial season begins. Biggest single portion of pipe output here is going to railroad car manufacturers, who are taking about 12 per cent of total pipe tonnage. So far pipe makers have been able to keep abreast of the car needs. Output is improving somewhat, due to increased worker efficiency, and may be boosted another 5 per cent when Laclede Steel Co. gets its new electric welding unit, which began last week, in full operation.

Seattle — Potential demand for cast iron pipe is extensive but many projects have been deferred until supplies are more readily available. Seattle has adopted the policy of awaiting arrival of pipe before asking installation bids. One agency reports delivery promises of eight months for larger sizes and 12 months for smaller sizes. Another agency cannot promise delivery in less than 18 months, more probably 24 months.

Gray Market Steels at Detroit Bringing $175

Detroit — Although there is unquestionably a moderate tonnage of steel moving at premium prices in this area, large buyers cannot afford the tariff and confine their extracurricular purchases to conversion material. Hot-rolled sheets bought on conversion arrangements run about $175 a ton and are involving increasing difficulties in scheduling and routing.

Hudson Motor is going ahead with plans to operate a rolling mill subsidiary at New Castle, Pa., although the full complement of equipment is not yet in place. It is not clear what source has been lined up for supplying hot bars, but it is possible they could be obtained in exchange for ingots processed here by Rotary Electric Steel Co. for Hudson.

Small stamping plants are the principal customers of so-called "gray market" steel and the prices they are paying will vary all over the map. One of the latest deals circulated around Detroit is from a Washington, D. C., syndicate, offering any type of steel at $55 per ton over the mill price, with the single proviso that the end user must be "east of Pittsburgh," the steel presumably coming from mills in the Pittsburgh area.

Testimony given in the Senate recently confirmed the movement of a substantial tonnage of steel from a Chicago mill on consignment to a Detroit fabricator but shipped to another buyer. The arrangement was made apparently with the connivance of a mill order clerk, and a premium price well over the warehouse rate was involved.

Some observers here profess to see a complete disappearance of all high-price steel sales inside of six months. After that may come the gradual elimination of forgetting of some of the dozens of extras now applied to nearly every grade of finished steel. This will be the first sign of weakness on steel prices to watch for.

Steel Bars . . .

Bar Prices, Page 162

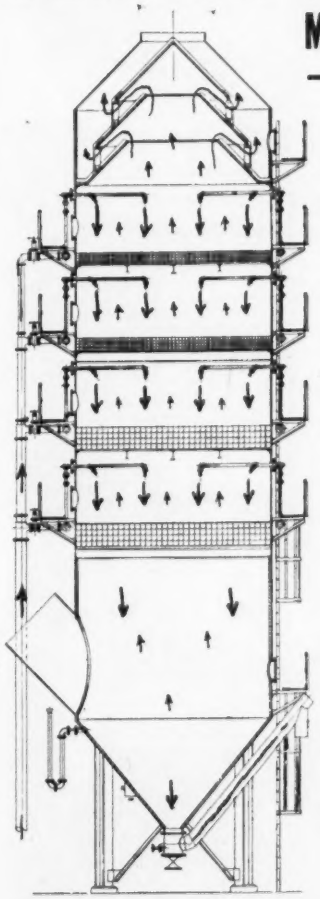
Pittsburgh — Sellers of alloy and cold-finished bars report steady volume of incoming orders and substantially larger volume than the monthly average recorded in either the third or fourth quarter last year. Fact many customers were working off unbalanced inventories throughout last half of 1947 is believed to be one of major factors in present favorable new order trend. Threat of coal strike, reduction in mill quotas resulting out of augmented export directive tonnage under the Marshall Plan, and discontinuance of alloy bar production by some interests, are believed contributing to healthier demand. Bar mill output through January and February was reduced up to 50 per cent in some instances due to iindustrial gas shortage. Corresponding adjustments in second quarter mill allotments are held necessary if resultant carryover tonnage is to be shipped.

New York — Due mainly to expanding requirements of the automotive industry, demand for alloy bars continues to increase. Some leading producers have little to offer under two months and on some of the smaller sizes are now quoting ahead as far as June. This is cutting into production of hot carbon bars because some producers, when demand for alloy bars was at low ebb, used certain of the alloy facilities; now, with alloy requirements expanding, these facilities are no longer available.

Meanwhile, pressure for hot carbon bars continues strong, with second quarter promises far short of needs. There is talk of an easing in demand in the products of some bar consumers, with keener competition resulting, but this has not as yet been reflected in any appreciable degree in demand for bars. Some hot carbon bar sellers, in fact, regard demand as pressing as at any time since the end of the war.

Boston — For freight car building and other industrial requirements covered by voluntary allocations, bar commitments are heavier and mostly at the expense of other consumers in second quarter quotas. Although the supply of cold finished is less stringent than in hot-rolled carbon, there are certain sizes in the smaller range, including flats, hard to obtain in quantity required. Ratio of carbon bars to alloys being used by forge shops is higher and inventories are out of balance in most cases. Heavier demand for alloys has extended deliveries moderately, although this increase in demand for those grades is not much

SEAVER *Improved* GAS WASHER *and* MOISTURE ELIMINATOR



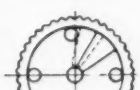
Light Arrow indicates the passage of gas. Heavy Arrow indicates the flow and distribution of water through the washer.

★ Prevents plugging

★ Wets both lower and upper surfaces of Spiral Tile

★ Washes thoroughly

The new and improved Seaver ceramic tile for gas washers has five holes; one through the center and four just inside the shell through the spiral. These enable part of the water to pass through and thoroughly wet the under side of the spiral and inside of the tile where the gas first impinges. The result is a greatly increased wetted surface for the gas to scrub against, giving thorough and complete washing of gas.



Top view of Spiral Tile shows holes which permit water to thoroughly wet the under side. Cross-section view of tile shows improved water distribution.

The Seaver moisture eliminator at the top consists of glazed elements and presents a large expanding area which reduces the velocity and requires the gas to turn 180° to reach its exit. This eliminates a large percentage of the moisture which contains dirt. This moisture is then deposited through holes on the lower tile banks to again do useful work.

Write today for blueprints and further information. We shall be glad to show you how you can secure cleaner gas with the improved Seaver elements adapted to your present washer

COMPLETE SERVICE TO THE IRON AND STEEL INDUSTRY

CONSULTING • DESIGN • CONSTRUCTION • REPORTS • APPRAISALS • INVESTIGATIONS
MANAGEMENT AND OPERATION • THIRTY-FIVE YEARS EXPERIENCE IN THE INDUSTRY.

Jay J. Seaver, Engineers, 100 North La Salle St., Chicago 2, Ill.

noted by warehouse distributors.

Cleveland — Continued heavy demand for hot-rolled carbon bars, an increasing tonnage of which is allocated to the freight car building program, has helped boost orders for alloy bars, principally hot-rolled, to such an extent that one company now reports deliveries are extended into July and August. Not long ago deliveries could be made within 60 days. One producer which had been devoting part of its alloy capacity to production of carbon steel has had to revert somewhat to output of alloy to meet the increased demand for the latter. Tightness in the hot-rolled carbon bar supply has become approximately as severe as that in cold-finished sheets. In fact, to ease the bar supply, some semifinished may have to be diverted from sheet production to bar output.

Wire . . .

Wire Prices, Page 163

Boston — Demand for high carbon spring wire is heavier. Releases by the automobile industry for most grades, including valve spring wire, are increasing. Mills are booked through second quarter with a substantial carryover eliminating any change for heavier allocations for that period. Users of low carbon wire are operating with small inventories and screw manufacturers continue to ask for more tonnage. Limited supply of rods is holding finishing operations to schedules which are subject to frequent adjustment to meet supply.

Birmingham — Wire products give no indication of being available in needed quantity, since actual capacity is not sufficient to meet present demand. Jobbers are regularly asked what has become of such wire products as nails and fencing. Their only answer, of course, is that allocations are entirely insufficient. Their own allocation program is the only answer they can devise.

Metallurgical Coke . . .

Metallurgical Coke Prices, Page 164

Pittsburgh — H. C. Frick Coke Co. has retired 1150 beehive ovens from active service now that increased by-product coking capacity is available at United States Steel Corp.'s Clairton Works. The affected ovens accounted for about 20 per cent of the beehive ovens operated by or leased out by the Frick company. Despite tight coke supply situation, most foundries contend the critical pig iron shortage will remain the controlling production factor in months ahead.

Boston — Foundry coke prices have been advanced 65 to 75 cents a ton by two New England producers. New England Coke Co. is charging $20.40 delivered within a $3.60 freight zone. Former price was $19.75 within $3.50 zone. Truck delivery is 50 cents more. Providence Gas Co. is up 75 cents to $20.45 delivered.

Plates . . .

Plate Prices, Page 163

Boston — Plate mill carryovers into second quarter will be heavier with some producers than at start of the first, reflecting production losses. Allocations are reduced accordingly. The freight car building program and allocations to the oil industry will take a substantial part of tonnage. Tank fabricators, producing for the latter, are putting on pressure for additional plates. This group has been hard pressed for steel for months with backlogs heavy. Weldment shops are also becoming short of material, although backlogs for weldments are building up more slowly. A department store foundation, Boston, takes 450 tons of welded caissons requiring plates.

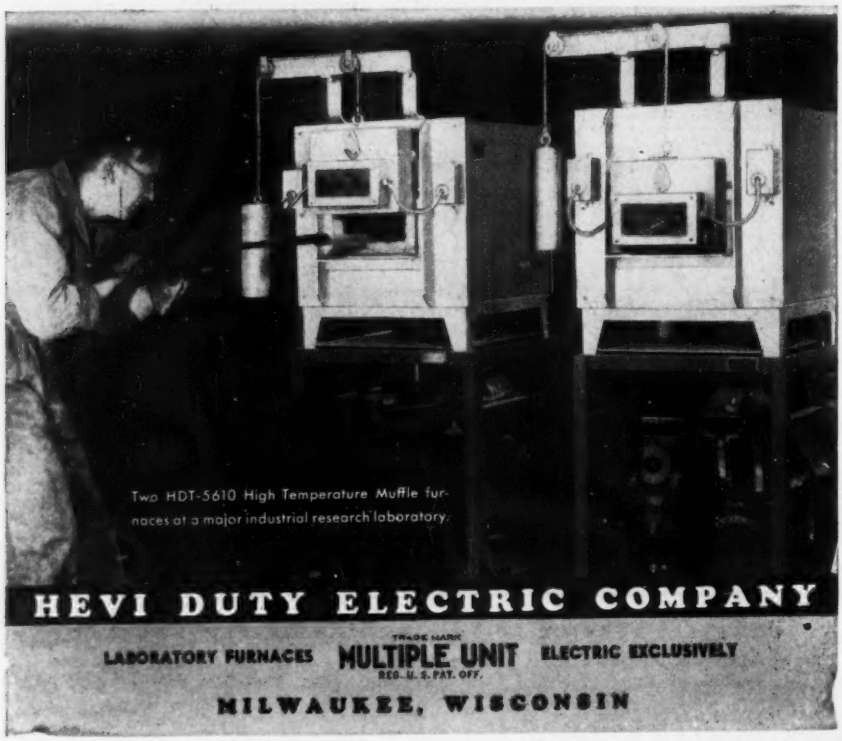
New York — Plate supply continues as tight as ever. Most producers will enter the new quarter with a substantial carryover of tonnage already due customers. With allowances for these arrearages and quotas that have been set up, mills generally are booked tightly up through June, beyond which they are refusing to quote. Only on certain tonnages where extra processing and fabricating are required can consumers count on getting shipments against new orders before July 1.

Philadelphia — Plate requirements continue heavy with producers generally making little headway on backlogs. Most sellers will enter the second quarter with arrearages equal to at least a full month's production, if not more. However, with spring approaching operating conditions should be more favorable.

Birmingham — Plate users are as

Research Tools of Progress

Hevi Duty electric laboratory furnaces are research tools of progress. The two HDT-5610 High Temperature Alloy 10 furnaces shown are in daily operation in one of the country's major industrial research laboratories for studies of the effect of heat treatment on metals and alloys and fusibility of ceramic materials. These Hevi Duty furnaces, with their uniform, exact, controlled temperatures, are standard in most laboratories where controlled heat to 2350° F. is required. Bulletin HD-339 details their construction and use. Send for your copy — today.



Two HDT-5610 High Temperature Muffle furnaces at a major industrial research laboratory.

HEVI DUTY ELECTRIC COMPANY

LABORATORY FURNACES MULTIPLE UNIT ELECTRIC EXCLUSIVELY

TRADE MARK REG. U. S. PAT. OFF.

MILWAUKEE, WISCONSIN

hard pressed as ever and more of them are turning to the gray market for relatively small tonnages. Tank fabrication is active in the district and freight car production continues to account for a large plate tonnage monthly.

Seattle — While plates are in acutely short supply, fabricators state they are adjusting operations to available supplies and are restricting their contracts accordingly. Old established firms are receiving supplies in limited tonnages and are not interested in buying from other than regular mills. In a few instances, gray market offers for plates have been made.

Pig Iron . . .

Pig Iron Prices, Page 164

Boston — An increase in the ratio of pig iron to scrap in melts, rather than an accumulation of inventory, is the immediate concern of the average foundry. Prospect for any improvement in either direction is doubtful due to lack of iron. Tonnage which accumulated at the Everett, Mass., furnace because of transportation delays has been delivered, but the car shortage is a hampering factor. At one time recently nearly 4000 tons accumulated at Everett. This furnace is the only supplier for bulk of the district's requirements and is having difficulty in reaching capacity output. Except for around 600 tons to a Connecticut melter, shipments of Texas iron at $95 and more a ton, delivered, are in small lots. Most contracts taken months back for Texas iron were returned before the furnace resumed production. Volume of shipments from Buffalo is small, confined to silvery pig iron and specialties. Users of basic iron are operating on a hand-to-mouth basis. Prices are steadier on the volume tied to scrap quotations at Buffalo.

New York — While the flow of pig iron may be a shade heavier this month, some leading foundries doubt if their daily melt will be as heavy as in February. In addition to a possible better movement in pig iron, they anticipate a freer supply of scrap, but doubt if the coke situation will improve sufficiently to enable them to increase their output of castings.

Pittsburgh — Increased gas supplies have enabled foundries to step up operations. However, pig iron supply remains well below requirements and until this situation is remedied most foundries will be unable to operate better than 78 per cent of capacity. Continued scarcity and relatively high price of cast scrap have prevented many foundries from offsetting the inadequate iron supply. Foundry coke is also tight, but availability of beehive coke has enabled most foundries to maintain normal operations in relationship to availability of iron. Some foundries are purchasing short turnings at higher prices than the prevailing market and selling them to blast furnaces at much lower prices in return for pig iron.

Philadelphia — Shortage in pig iron appears about as pronounced as ever, although some district foundries report that scarcity of coke is even more acute with them. In recognition of this scarcity one leading district coke producer is delaying resumption of his repair program until possibly May.

Cleveland — Although gray iron foundries' backlogs are said to be declining and some purchasing agents report improved deliveries of castings, foundries continue to press for supplies of pig iron. Among the pleas are frantic ones from foundrymen whose iron suppliers no longer serve the merchant trade. Pig iron prices remained unchanged here last week.

Chicago — Repairs to blast furnaces keep pig iron supply on an irregular basis. At present 38 of the district's 41 furnaces are in operation. Carnegie-Illinois Steel Corp. relighted its No. 8 stack at Gary on Feb. 24, while Wisconsin Steel Co. blew out its No. 2 unit at South Chicago on Feb. 29 and Youngstown Sheet & Tube Co. idled its No. 2 furnace at Indiana Harbor on Mar. 1. Meanwhile, foundries struggle to get iron and in some cases coke. Supply of the latter likely will improve faster than pig iron, for with approach of warmer weather less coke will be used by certain utilities to manufacture water gas.

Buffalo — While merchant iron output is expected to improve this month, foundries are plagued with new pressing problems. A leading iron producer is slated to return to normal operations after cutting wind on its blast furnaces during February because of insufficient coke. This smaller February output further aggravated the situation for foundries. Melting operations have been slashed drastically. American Radiator & Standard Sani-

Installed and recommended by a growing number of major equipment builders or their dealers

ROSS "BCF" COOLERS

For oil or water in small to medium size engines, turbines, gears or hydraulic presses

A growing number of major equipment builders, in looking out for your interests, are installing Ross "BCF" oil and water coolers as *original equipment.*

On the other hand, many equipment builders leave it to their dealers to furnish Ross "BCF" Coolers as an optional accessory.

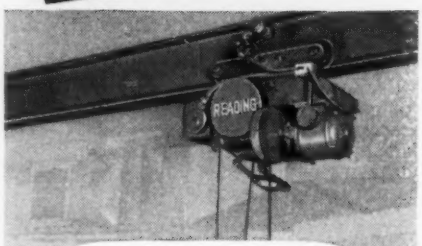
Either way, the chances are that the oil or water cooling will be done by a "BCF" unit when your next hydraulic press, plastic injection molding machine, die-casting machine, Diesel or gas engine, compressor, hydraulic coupling, torque converter, reduction gear, thrust bearing or turbine is placed into operation.

By this selection, both builders and dealers are providing you with: maximum heat transfer efficiency packaged in a compact, relatively small unit; extra rugged construction to withstand higher pressures; a favorable initial cost through standardization of a carefully engineered design; all nonferrous materials to prevent rust and corrosion; roller expanded, permanent, leakproof tube joints; easy accessibility for inspection and cleaning.

It will be well worth your inquiring about the type oil or water cooler planned for your equipment. If it's not a Ross "BCF", familiarize yourself and then *insist* upon it! *Bulletin 4922, with complete design details, will be furnished gladly upon request.* ROSS HEATER & MFG. CO., INC., Division of American Radiator & Standard Sanitary Corp., 1431 West Avenue, Buffalo 13, New York.

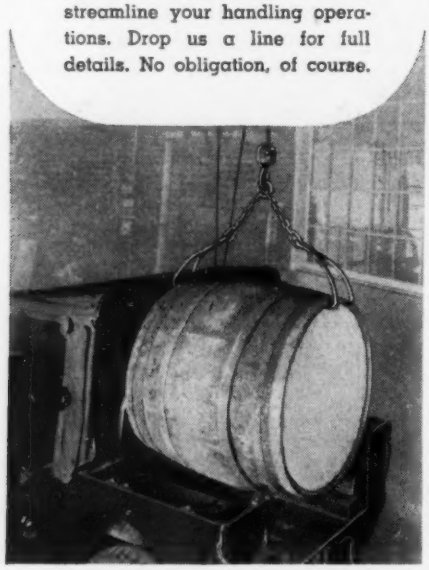
Ross equipment is manufactured and sold in Canada by Horton Steel Works, Ltd., Fort Erie, Ontario

HOW ONE PLANT *Streamlines* MATERIAL HANDLING



Here's another example that shows how you can get fast, low-cost materials handling, right now. Before installing a *Reading* engineered system, this plant had to wheel heavy barrels to the mill via hand trucks. To streamline the operation, *Reading* Engineers were called in. A one-ton Reading Electric Hoist, operating on a built-in parallel trolley, was recommended. Now barrels move faster—less manpower is tied up—and the entire operation costs far less!

Let Reading Engineers give you *practical* suggestions that can streamline your handling operations. Drop us a line for full details. No obligation, of course.



READING CHAIN & BLOCK CORPORATION
2102 ADAMS ST., READING, PA.

CHAIN HOISTS • ELECTRIC HOISTS
OVERHEAD TRAVELING CRANES

READING HOISTS

tary Corp. has eliminated a night shift at one of its local plants, laying off 800 workers. Although unable to cope with shortages of raw materials, foundries are being assailed by union spokesmen on the time lost by workers. Coke remains tight and hard to get with prices unchanged. Although a relining job is due, the Tonawanda Iron stack continues to operate, leaving operations unchanged with 15 out of 16 stacks active.

Cincinnati — Pig iron supplies are tighter than ever due to a freight car shortage. Melters have no stocks and, hence, every delay in shipment means a blow to the melt. Scarcity of southern iron seems more acute than northern tonnage in this district which has no furnaces of its own on foundry iron. Reports indicating expanded needs in the South fail to brighten the outlook.

Birmingham — Estimates of a year ago that pig iron requirements of the district were approximately 50,000 tons a month short still hold. One of the district's largest users says any revision of the figure should be slightly upward. Merchant iron melters do not foresee much prospect for improved supplies.

Seattle — Demand for foundry output is slightly off but operators regard this as temporary since spring contracts will be out soon. Pig iron is extremely scarce and consequently there is a larger ratio of cast iron scrap required. The new price of $40 gross for No. 1 cupola cast, established recently to offset inroads by eastern buyers, has not stimulated shipments but no further purchases by outside interests are reported, and a better supply of scrap is anticipated shortly.

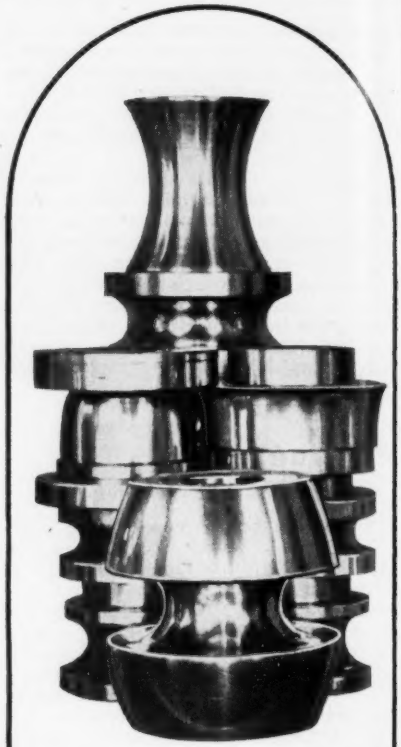
Warehouse . . .

Warehouse Prices, Page 165

Boston — Warehouse volume, although substantial, is at a lower level than would be the case if inventories were in balance. Shortages remain in flat-rolled, structurals, plates, flat carbon bars, pipe and nails. Stocks of other materials generally cover demand. Distributors of tool steels, alloys and specialties are better off as to steel than the general line warehouse normally moving bulk of its volume in carbon steel products. Second quarter allotments are no higher (actually smaller in some cases as in structurals), but more steel is expected to be delivered next quarter since considerable volume is due warehouses from first quarter quotas.

Cleveland — Reflecting a rise in Ohio intrastate freight rates at the end of February, warehouse prices here on galvanized sheets and alloy bars, for which Canton, O., is base, have been increased. One warehouse which previously quoted 10-gage galvanized sheets at 5.81c a pound and 24-gage at 7.06c now quotes 5.82c and 7.17c, respectively. On hot-rolled alloy bars, 4140 as rolled, this warehouse quotes 7.26c a pound instead of 7.16c as previously. This warehouse also has readjusted its floor plate prices, making a slight upward change since its price revision recently in recognition of Cleveland being made a mill base for floor plate.

Cincinnati — Shipments of steel to



High Grade
ROLLER DIES

made of tool steel, designed and manufactured by men who are first-class craftsmen.

The quality of your roller production depends on the quality of your roller dies. Many manufacturers of COLD ROLLED FORMED PRODUCTS AND ELECTRIC WELDED TUBING compare quality, performance and cost, and wind up by placing orders with us. Naturally, you would like to know who uses our product. We will be glad to send you names of our distinguished customers on request. All inquiries will receive our immediate attention.

AMERICAN ROLLER DIE CORPORATION
(FORMERLY NATIONAL ROLL & MACHINE CO.)
20500 ST. CLAIR AVE.
CLEVELAND 17, OHIO

ARDCOR

warehouses are being cut back, probably a reflection of the loss in tonnage during the gas shortage and of voluntary allotments for car building needs. Therefore, with demand sustained the gap between supply and needs has widened. Cold-rolled bar prices have been marked up, to absorb higher freight charges.

Seattle — Wholesale jobbers report a strong and steady demand for all items out of stock. Inventories are badly broken, as materials are frequently shipped directly to the job. While there may be some gray market operations in certain items, established firms report little knowledge of such activities as they deal only with long time connections with whom cordial relations exist.

Scrap . . .

Chicago mills buy No. 2 heavy melting from dealers at $37.50, delivered

Scrap Prices, Page 168

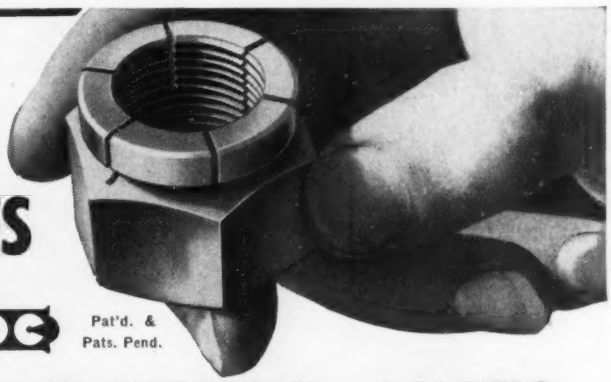
Chicago — Mill purchase of dealer scrap here last week at $37.50 a ton, delivered, a figure which is $2 less than the price which has prevailed, suggests that return of a prewar differential between factory and dealer grades may be at hand. The differential was abandoned early in the war. Mills have not altered their $39.50 price formula for open-hearth material of factory origin, but are virtually out of the market. Furthermore, the majority are buying no dealer scrap. Despite a heavy snow fall last week, mill receipts held up well, thus melting requirements are being met fully. Recent market developments have promoted confusion. All kinds of prices to dealers are heard as brokers cover old contracts.

Cleveland — Belief that an easing in scrap prices is not far away continued here last week. Brokers were concentrating their efforts mainly on filling formula-price orders, some of which expire Mar. 15 with others running to the end of March, but as the flow of scrap is improving there was a feeling that when brokers again seek new orders in volume something less than the formula price will prevail.

Meanwhile, buyers of steelmaking scrap continued to offer the formula price for what little new tonnage is offered. However, the scrap trade here kept a watchful eye on the Chicago market where recently No. 1 heavy melting sold at around a dollar under the formula. While part of the easiness there is attributed to an easing in the price structure, part of the decline is the result of a move on the part of at least one steel mill to stop scrap dealers from acting in the role of broker. While the scrap supply was tight some Chicago yard dealers who normally route scrap through brokers bypassed the brokers and offered scrap at the same price brokers asked. With improvement in the scrap flow, at least one mill now offers dealers $38.50, or $1 a ton below the formula which it currently is offering brokers.

Easing in the steelmaking grades also is having a softening effect at Cleveland on foundry grades, foundrymen reporting some of the pres-

FREE SAMPLES



FLEXLOC Pat'd. & Pats. Pend.

SELF-LOCKING NUTS

The one-piece, all-metal "Flexloc" packs maximum usefulness in minimum space by combining, as it does, a stop, a lock and a plain nut all in one.

Every thread—including the locking threads—takes its share of the load. "Flexloc" accommodates itself to a wide range of thread tolerances . . . can be used over and over again without losing much of its locking torque . . . is not affected by temperatures likely to be met within the field of Mechanical Engineering . . . and being a "stop" nut, it stays locked in any position on the threaded member. The "Flexloc" is processed to have an exceptionally uniform torque. The *Thin* "Flexloc" has become very popular because its *tensile* is so high and the space it occupies so small.

Sizes from #6 to 2" in diameter—in "regular" and "thin" types—in NC and NF thread series. *Write for "Flexloc" Catalog.*

OVER 45 YEARS IN BUSINESS

STANDARD PRESSED STEEL CO.

JENKINTOWN, PENNA. BOX 679 BRANCHES: BOSTON • CHICAGO • DETROIT • INDIANAPOLIS • ST. LOUIS • SAN FRANCISCO

SHEAR IT CLEVERLY WITH A

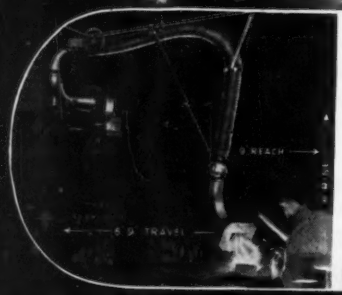
BEVERLY THROATLESS SHEAR

● Handles intricate cuts easily. No distortion. Unusually strong and durable, geared to give great power with little effort. Metal can turn any direction while cutting.

● Machines available for 14 ga., 10 ga., and 3/16 in. material.

Write for folder today!

BEVERLY SHEAR MFG. CO.
3011 West 111th St.
Chicago 43, Ill.



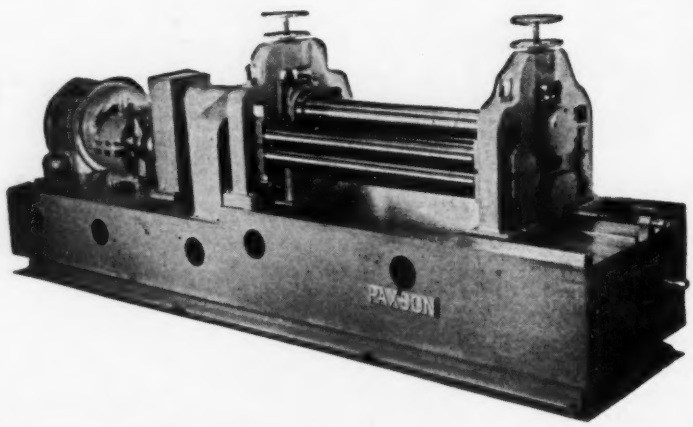
GUARD EMPLOYEE HEALTH by installing Ruemelin Fume Collectors wherever welding operations take place. They remove noxious gases, heat and smoke at the source. Eliminate employee fatigue. Speed up welding operations. Especially valuable in winter when doors and windows must be closed. Over one thousand in satisfactory service. Many repeat orders. Write for Bulletin 37-C.

RUEMELIN MANUFACTURING CO.
3882 N. PALMER ST. MILWAUKEE 12, WIS.
Manufacturers and Engineers
PATENTED Sand Blast and Dust Collecting Equipment

RUEMELIN FUME COLLECTOR

A 3888-½R3

IT'S NO JOKE SON!
If you slit *either* SHEETS or COILS



You need our new 48" **SHEET** or **COIL** trio-housing **SLITTER**

BUILDERS OF COMPLETE SLITTING LINES

PAXSON MACHINE CO.
SALEM, OHIO

sure off prices as the flow of scrap improves.

Pittsburgh — Upward trend in scrap shipments recorded during the latter part of February has continued. Most mills state to date this month the influx of material exceeds daily consumption rate, with result that inventories have been augmented somewhat in recent weeks. Major scrap consumer in this district is temporarily out of the market, having placed orders for over 100,000 tons last month at the formula price of $40.50 for steelmaking grades. Most brokers still have a long way to go before making much inroads into heavy commitments made with leading consumer during February. However, there are no signs that dealers or brokers will have much difficulty in covering their large tonnage "formula" price commitments. Weakness in scrap quotations noted in other areas has not yet been reflected in lower prices here.

New York — Movement of open-hearth steel scrap continues to improve, with consumers closing on all available at formula levels. Generally milder weather conditions are resulting in a better supply. However, brokers' buying prices on the melting steel grades are unchanged.

Offerings are a little easier on machine shop turnings and mixed borings and turnings, now ranging $28.50 to $29 fob shipping point and on punchings and plate scrap, cut structurals and electric furnace bundles at $39 to $40.

The principal cast grades continue to advance. Brokers are now offering $58 to $60 fob shipping point for No. 1 cupola, charging box and heavy breakable cast, and $55.50 to $56.50 for unstripped motor blocks. Malleable is higher at around $68 to $69.

Boston — Steelmaking scrap is slightly more active at formula prices, but confusion reigns in cast grades with supply limited and quotations high. Up to $70 a ton has been paid for No. 1 cupola. The high cost of cast has forced some steelworks out of the market for that grade because of inability to pass on the increased cost in steel prices. This is possible in castings and the latter are now bringing close to record prices on a per pound basis. Malleable and scrap specialties are commanding higher prices. At seaboard points, more small craft have been acquired for breaking.

Philadelphia — While mills here are paying $39 delivered for No. 2 heavy melting steel scrap, No. 1 bushheling and Nos. 1 and 2 bundles, a Harrisburg, Pa., consumer has purchased a fairly representative tonnage of open-hearth steel scrap at $38, representing a dip under the formula level at that point. Whether this weakness will spread to local district mills remains to be seen. Meanwhile, one district consumer is still paying $41.50 delivered for No. 1 heavy melting steel of choice quality. Bar crop and plate, cut structurals and punchings are easier at $45 to $46, delivered, while electric furnace bundles are lower at $43.50 to $44.50 and heavy turnings at $42.50 to $43. Cast grades for the first time in several weeks show no change, although the undertone is strong.

Buffalo — Reports circulated by a mill consumer that sales of No. 2 heavy melting and bundles have been

Westinghouse
says a good word
for **IDEAL**
LIVE CENTERS

Lawrence G. Lang, Westinghouse machinist, turning 10" bar FS #3848 with Ideal Live Center. Feed is .022 @ 200'/min. Tool is Kennametal.

. . . in the words of G. Young, tool supervisor at the Nuttall Plant of Westinghouse Electric Corp., Pittsburgh: "Since installing Ideal Live Centers we have had no 'down' time due to center wear."

What happened at Westinghouse is a typical case history. When they switch to Ideal Live Centers users save from 20 to 50% and raise the quantity and quality of lathe output. They get deeper cuts at higher speeds with no burning of work or center. There's no friction—no grabbing—no gouging—no time loss on lubricating and grinding—less spoilage—more profit per man hour!

The Ideal "Multi-Duty" Live Center is available from stock with male, female, and pipe type inserts; also Heavy Duty Live Center, built to carry heavy loads—accurate to .0005. Ask for information and free demonstration today. IDEAL INDUSTRIES, Inc., Sycamore, Ill.

IDEAL
Distributed Through
AMERICA'S LEADING
WHOLESALERS
Canadian Distributor: Irving Smith, Ltd., Montreal

made in this area at 25 cents under the pricing formula of $39.75 were denied by leading dealers. They generally believe that no immediate sales below the formula are in prospect. However, there are signs of easier tendencies in the closer scrutiny of deliveries by consumers. Dealers said they might have been guilty of abusing liberal inspection policies by mills when the market was tighter. The general market is in a steady leveling off period. Dealers are shipping against old orders and feel that additional tonnage will be forthcoming at the formula price. While shipments into Canada continue against old orders, no new such business of any consequence was reported last week. Cast prices were easier with No. 1 cupola off at $60 to $62.

Bethlehem Steel Co.'s Lackawanna plant will receive about 2000 tons of scrap from the vessel *S. B. Coolidge* which is being scrapped by Harry Schlessman of Erie, Pa.

Detroit — Increases in outside scrap purchasing by Ford, necessitated by a progressive tapering in production at the Rouge incident to model change, has bolstered the market locally, although it is sentimentally weaker following the news that mills in the Chicago area had lowered their buying prices by $1 a ton on dealer scrap. Quotations on most grades here, including cast, are unchanged, although specialty items are selling off. Leading brokers are pessimistic in their price outlook.

Cincinnati — Scrap is coming out in better volume. Yard work and collections are facilitated by more moderate weather, and the easier price situation is discouraging to speculative holdings. Formula prices, however, are being maintained on steelmaking grades. Quotations on cast scrap are firm with consumer demand active.

Birmingham—Consensus of observers here is that a weakening in scrap is definitely under way. Formula prices are pretty much in evidence, but one large scrap user said even these will be downward within the next few weeks at the latest. Springlike weather of the past few days with a resultant increase in scrap preparation has strengthened the downward trend.

St. Louis — Scrap in this district is showing a tendency toward price weakness but no actual declines have been reported. One of the largest consumers here bought heavily last week at the formula price; others are said to have a minimum of 30 days' supply. These stocks may soften the market soon. Shipments are fair, improving slightly each week. One big user makes the prediction the scrap shortage here is over until next winter, if farmers produce their normal volume of scrap this spring. Contrary to the past, mills have been able to get deliveries on their scrap contracts at quoted prices.

Seattle — Steel scrap market is unchanged at $24, mills reporting receipts equaling consumption but there is insufficient margin to build up inventories. The Northwest Steel Rolling Mills, Seattle, has established its own ship breaking facilities at the plant and is currently engaged in dismantling several small vessels. Improved weather is expected to result in larger shipments from the interior.

U·S·AUTOMATIC CORP.
SCREW MACHINE PARTS

Rely on this trade-mark for precision screw machine parts.

BAR CAPACITY 3/64" to 5 1/2"

More than a hundred automatic screw machines are ready to make your parts now.

If your part is small (3/64") or large (5 1/2") we have the machines to do the job. We also have complete, turret lathe, milling machine, grinding and heat treating departments.

Leading manufacturers depend on US for their parts production; you can, too.

SEND US YOUR PRINTS TODAY
WRITE FOR BULLETIN B

BAR STOCK CAPACITY
3/64" to 5 1/2" diameter

ALL SECONDARY AND FINISHING OPERATIONS UNDER ONE ROOF.

CHICAGO
DETROIT
INDIANAPOLIS
NEW YORK
PITTSBURGH
PHILADELPHIA

U·S·Automatic Corp.
Amherst, Ohio

Bolts, Nuts . . .

Bolt, Nut, Rivet Prices, Page 163

New York—Demand for small sizes of bolts and nuts continues far in excess of supply. On sizes 1/2 by 6 inches and under, leading sellers have backlogs ranging from four to six months. Scarcity of hot rolled steel is contributing to difficulty in making headway on these backlogs. With steel mill operations likely to be better in second quarter they may be able to get more overall tonnage, allowing for arrearages; however, they will not get as much as they will require to maintain full production and some believe that whatever the improvement in mill receipts it will not be sufficient to help them greatly in whittling backlogs, especially if demand keeps up at the pace now anticipated.

On the larger sizes, 5/8-inch and heavier, demand is slack and consequently in fair balance with supply. Bolt and nut makers can offer shipments within 30 to 60 days. Lull in building construction is the principal factor in restricted demand for these larger specifications.

Export demand for bolts and nuts is coming principally from the Philippines and India. Demand from South America has declined quite sharply over recent months and there is relatively little European inquiry. However, this latter situation should pick up once the European Recovery Program gets under way.

Bolt and nut prices generally are unchanged, although costs continue to advance appreciably.

Pittsburgh — Substantial improvement in production of metal fasteners has resulted from general easing in industrial gas shortage in this area. However, considerable tonnage was lost during the first two months of this year, extending order backlogs 5 to 6 months on an average, with some items not available until late this year. Mill deliveries of wire rods, cold-heading stock and other wire items were similarly affected by the shortage of gas.

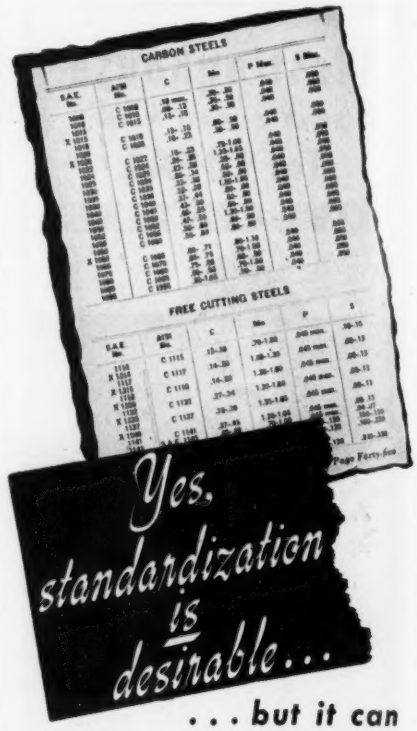
Rails, Cars . . .

Track Material Prices, Page 163

Pittsburgh — Jones & Laughlin Steel Corp. has revised the schedule of extras covering track spikes, effective as of Feb. 16. The new schedule supersedes the list dated Dec. 27, 1946. The revisions in size extras alone are equivalent to no change in certain base sizes up to $41 per ton on small sizes. Base for the size extras is now 5/8-inch x 4-1/2, 5, 5-1/2, 6 and 6-1/2 inches compared with the former base of 9/16-inch x 4-1/2 inch and larger, up to and including 5/8-inch x 6-1/2-inch, in 1/2-inch increments. Extras now range from 40 cents to $4 per 100 pounds compared with 50 cents to $1.95 formerly.

Extras have been increased 10 cents to 20 cents for copper bearing steel or any minimum 0.20 per cent or under; and to 25 cents for any minimum copper over 0.21 per cent to 0.40 per cent, inclusive. Packing extra has been increased 30 cents to 50 cents for 100-pound kegs, the base still being 200-pound kegs.

Cleveland — Size extra revisions, most of them amounting to $8 a ton, were made on track spikes effective



. . . but it can also cause trouble when it comes to Cutting Fluids

While it is obvious that the number of different types of cutting fluids used in any plant should be kept to a minimum, over-standardization can be very costly. There is no universal "one-shot" cutting fluid. The many variables involved in the wide variety of machining operations encountered in most shops make it difficult for any one individual to make the most intelligent selection and application of cutting fluids. The D. A. Stuart Oil representative has behind him the resources of 82 years' company experience, a finely equipped laboratory and a sound list of products. He will not be unsupported when he calls to help you. His recommendations will not call for more different fluids than are essential to maximum performance, but on the contrary, may result in a decrease in the number of oils used in your shop.

Literally thousands of authenticated case studies prove Stuart products, coupled with Stuart service, almost always result in greater production, better finishes and longer tool life. Don't overlook the opportunities afforded by proper cutting fluids properly applied. Write today and ask for D. A. Stuart's booklet, "Cutting Fluids for Better Machining".

STUART *oil engineering goes with every barrel*

D. A. Stuart Oil Co.

2735½ SOUTH TROY STREET, CHICAGO 23, ILL.

Feb. 23 by Republic Steel Corp. As Republic currently is not producing small size track spikes, the extra revisions were confined to the large sizes.

Roanoke, Va. — Norfolk & Western Railway will build 1000 additional all-steel 70-ton hopper coal cars at an estimated cost of $4,250,000. The cars will be built in the railroad's shops here and will be similar to the 2000 now being built in those shops.

New York — Freight car demand is undergoing a lull. Few new inquiries are out and recent orders are scattered. Car builders, however, have some sizable lists on which action may be taken in the near future, especially for the account of western railroads. The Southern Pacific list is still outstanding.

Production of railroad freight cars declined in February to 8463 from 8949 cars in January, according to the American Railway Car Institute. Of the February total, car builders produced 6306 units and railroad shops 2157. In the same month a year ago only 2292 cars were built.

Freight car awards are shown in the following table:

	*1948	*1947	*1946	1945
Jan.	9,213	9,172	1,481	7,200
Feb.	....	13,727	2,328	1,750
March	....	12,049	3,512	2,500
April	....	9,296	3,564	1,120
May	....	7,389	2,900	1,526
June	....	12,784	3,335	670
July	....	14,840	14,836	3,500
Aug.	....	2,372	9,527	7,240
Sept.	....	9,917	11,102	12,840
Oct.	....	17,737	3,407	1,320
Nov.	....	8,169	6,690	1,650
Dec.	....	4,218	3,441	4,116
Total	....	121,707†	66,723	45,432

* American Railway Car Institute.
† Adjusted; monthly totals not revised.

Canada . . .

Toronto, Ont.—Canadian steel producers have no surplus capacity in most materials to the end of June. On most steel lines, second quarter quotas are unchanged from first quarter with the exception of a cut in pig iron. The supply situation remains tight. With restricted imports from the United States as of Mar. 1, Canadian steel producers are called upon to make good this loss of tonnage, but it is doubtful if domestic output can be raised sufficiently to offset the loss. Prices on all iron and steel materials remain unchanged.

Demand for structural shapes was exceedingly heavy last month, possibly due to the import restriction, and supplies in Canada have been largely depleted with no indication of improvement. Building projects are being abandoned with no hope of obtaining steel, and what work is proceeding is under government permit.

Black and galvanized sheets continue scarce and mills are booked solidly to the middle of the year, with shipments going forth on a quota basis.

Steel plate also is tight and domestic output runs far short of meeting requirements. Indications point

FASTER PRODUCTION WITH A BURRO

When you have a BURRO in the yard, you get jobs done faster, easier and more economically. This speedy, powerful locomotive crane does every job a crane can do with bucket, hook, magnet, tongs or drag-line and at the same time, serves as your private switch engine to spot cars where and when you want them. There is no waiting time with a BURRO.

BURROS are economical to operate, simple to maintain and are built for hard work. Watch a BURRO on the railroad or on a plant siding and see why it's the busiest crane on the track

WRITE FOR ILLUSTRATED BULLETINS

CULLEN-FRIESTEDT CO.
1308 S. Kilbourn Ave., Chicago 23, U.S.A.

CUT-OFF WHEELS

Electro HIGH SPEED CUT-OFF WHEELS run true. Coarser grits in harder grades do an already speeded-up job even faster. The introduction of Electro HIGH SPEED CUT-OFF WHEELS reduced cutting time from minutes to seconds. Achievement of wheel truth freed us from grit limitations so that we could give you more speed with greater safety in wheels that run cool and leave a satisfying finish on both sides of their precision cuts. Send for free copy of Grinding Wheel Manual 645 with color photos.

Service from Los Angeles or Buffalo

R-337A

Electro SINCE 1919

Electro REFRACTORIES & ALLOYS CORPORATION
MFRS. • REFRACTORIES • (High Speed GRINDING WHEELS) • CRUCIBLES • ALLOYS
344 DELAWARE AVENUE BUFFALO 2, NEW YORK

THINK OF
"MASTER PRODUCTS"
WHEN YOU NEED
SPECIAL
WASHERS

Yes—each of our Special Washers is a *master product* . . . the result of more than a quarter of a century of experience in designing and producing washers of every description.

Let us help you solve your problems on Special Washers and Small Stampings. If one of our 10,000 sets of tools does not satisfy your requirements, our well-trained Tool and Die Department will be glad to work from your blue-prints.

Our long list of satisfied customers is your assurance that we can serve you well.

THE
MASTER PRODUCTS
COMPANY
6400 PARK AVE. · CLEVELAND 5, OHIO

to further tightening as the year advances.

Carbon bars remain on a delivery quota, but supplies are somewhat better than in sheets or plate. Cold-rolled bars and alloy bars, however, are in good supply with no shortages reported.

Wire and nails are scarce, despite increased production. Most retailers report no supplies on hand and it is virtually impossible to obtain delivery of the more popular sizes.

In the merchant pig iron markets demand is absorbing all available supply, despite the fact that blast furnace operators have increased allotments to melters from about 12,000 tons weekly. However, most of the improvement has been in basic iron which has been running close to 4000 tons weekly. In foundry and malleable iron, supply is tight and the market could absorb about double the available tonnage. Pig iron prices are unchanged.

Conditions are generally unchanged in the scrap market. Demand is heavy and domestic supplies are taking care of less than 20 per cent of requirements with no indications of betterment before May, when it is expected some effort will be made to gather in more scrap from rural districts.

STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

1900 tons, factory building, Chicago Pneumatic Tool Co., Frankford, N. Y., through Walter Kidde, New York, to American Bridge Co., Pittsburgh.

1500 tons, power plant, Texas Co., New York, to Bethlehem Steel Co., Bethlehem, Pa.

1000 tons, telephone exchange, White Plains, N. Y., to Bethlehem Steel Co., Bethlehem, Pa.

775 tons, Fall Creek local control project, including 9-span bridge, Indianapolis, to Bethlehem Steel Co., Bethlehem, Pa.; Smith & Johnson, Indianapolis, contractor.

495 tons, state bridge and viaduct, Waterbury, Conn., to Phoenix Bridge Co., Phoenixville, Pa.; Brunalli Co., general contractor, $556,151.15.

450 tons, addition, Hunts Point Gas plant, Consolidated Edison Co., New York, to Grand Iron Works Inc., that city.

400 tons, Brooklyn Terminal Market, Brooklyn, N. Y., through Planet Construction Co., to Jones & Laughlin Steel Corp., Pittsburgh.

400 tons, plant, Canada Dry Co., Philadelphia, through W. J. Barney, to Belmont Iron Works, Eddystone, Pa.

325 tons, school, Oak Lawn, Ill., to Duffin Iron Co., Chicago.

300 tons, bracing steel, Downsville, N. Y., dam, New York Board of Water Supply, New York, through Walsh Construction Co., to Bethlehem Steel Co., Bethlehem, Pa.

300 tons, warehouse, Perth Amboy, N. J., through Barry Steel Co., to American Bridge Co., Pittsburgh.

230 tons, building, Illinois State hospital, Chicago, to Henry E. Gremp Co., Chicago; James McHugh Construction Co., Chicago, contractor.

210 tons, new plant, H. G. Fischer & Co., Franklin Park, Ill., to Wendnagel & Co., Chicago; Stade Construction Co. Inc., Chicago, contractor.

200 tons, boiler house addition, Container Corp. of America, Chicago, to Wendnagel & Co., Chicago.

200 tons, warehouse, Bridgeport, Conn., through W. B. Meyer, to Bethlehem Steel Co., Bethlehem, Pa.

150 tons, laboratory, Pure Oil Co., Crystal Lake, Ill., to Clinton Bridge Works, Clinton, Iowa, for fabrication by Allied Structural Steel Cos.; Stone & Webster Engineering Corp., Boston, engineers.

150 tons, garage, Welfare Island, New York, through T.G.K. Construction Co., to American Bridge Co., Pittsburgh.

125 tons, bridge, Minot, N. Dak., for county, to Paper-Calmenson & Co., St. Paul.

103 tons, sheet piling, coffer dam, Fisk St. Station, Commonwealth Edison Co., Chicago, to Carnegie-Illinois Steel Corp., Chicago.

100 tons, plant construction, Condenser Services & Engineering Co., Edgemoor, Del., to unnamed fabricator.

STRUCTURAL STEEL PENDING

32,000 tons, superstructure, Mystic river bridge, Boston; American Bridge Co., Pittsburgh, low on complete structure; bids by divisions: Bethlehem Steel Co., Bethlehem, Pa., low on approaches, 17,000 tons; American Bridge Co., Pittsburgh, low on river crossings, 15,000 tons.

1700 tons, sheet piling, flood wall, Omaha; Parsons Construction Co., Omaha, low on general contract; bids to U. S. Engineer, Omaha, Feb. 26.

1000 tons or more, towers, grillages, etc.; bids in to Bonneville Power Administration, Portland, Oreg.

850 tons, five buildings, Penn State College, Penn State, Pa.; bids Mar. 25.

800 tons, apartment, Watchtower Bible & Tract Society Inc., Columbia Heights, Brooklyn, N. Y.; bids asked; Alexander D. Crosett, 27 William St., New York, engineer.

698 tons, bridge, proj. F, Sterling, Ill., for State Highway Department; bids Mar. 5.

661 tons, bridge, proj. 42-F, Rockford, Ill., for State Highway Department; bids Mar. 5.

400 tons, Reading railroad bridge, Newberry, Pa.; bids Mar. 8.

300 tons, Pine Grove dam, Oxford, Pa.; bids to be opened by Chester, Pa. municipal authority Mar. 25.

248 tons, bridge, proj. W2F1, Vandalia, Ill., for State Highway department; bids Mar. 5.

240 tons, state bridge, Snyder county, Pennsylvania; bids Mar. 19.

200 tons, research laboratory, Penn State College, Penn State, Pa.; bids closed Mar. 3.

190 tons, plant addition, Corry-Jamestown Mfg. Co., Corry, Pa., bids asked through Walter Kidde, New York.

170 tons, alterations and 2-story addition, 1040 Fifth Ave. Corp., Long Island City; bids asked.

154 tons, bridge, proj. S-0150(1), Eau Claire county, Wis., for state; L. G. Arnold, Eau Claire, Wis., low on general contract; bids Feb. 24.

150 tons, Washington state undercrossing, King county; bids to Olympia, Mar. 12.

150 tons, Washington state girder bridge, Pierce county; American Pile Driving Co., Everett, Wash., low $53,671.

130 tons, bridge, proj. F321(3), Thurston City, Nebr., for state; bids Mar. 4.

125 tons, public school, Milford, Del.; bids asked.

Unstated tonnage, plant addition, Patchogue-Plymouth Mills, Patchogue, Long Island; bids asked.

Unstated tonnage, building, Bronx Savings & Loan Association, New York; bids asked.

REINFORCING BARS . . .

REINFORCING BARS PLACED

3600 tons, Argonne National Laboratory for Atomic Research, DuPage county, Ill.; 1600 tons to Truscon Steel Co., Youngstown, O.,

WELDING ENGINEERING CORPORATION
MILWAUKEE 2, WISCONSIN
MANUFACTURERS—DISTRIBUTORS
Offices and Agents all over the United States

mechanical
POWER PRESSES
FOR
ALL INDUSTRIES

ZEH & HAHNEMANN CO.
56 AVENUE A, NEWARK 5, N. J.

TIN PLATE
COP-R-LOY PIPE-SHEETS
Ductilite
THE MODERN TIN PLATE

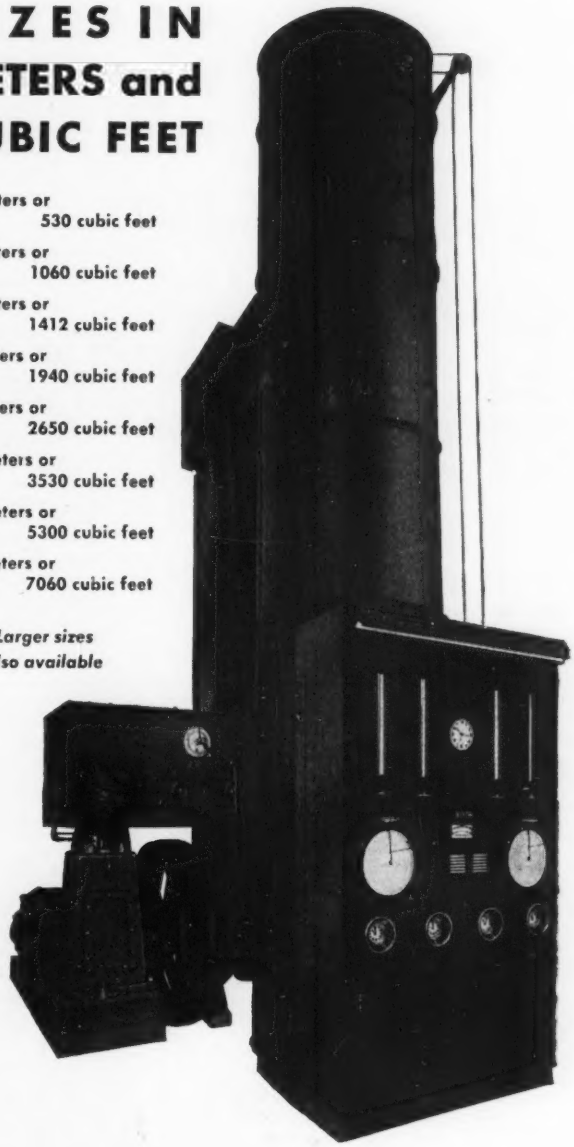
WHEELING STEEL CORPORATION
WHEELING, WEST VIRGINIA

Expansion Engine Type
Medium Pressure
OXYGEN and NITROGEN
PRODUCING PLANTS

SIZES IN METERS and CUBIC FEET

15 Meters or 530 cubic feet
30 Meters or 1060 cubic feet
40 Meters or 1412 cubic feet
55 Meters or 1940 cubic feet
75 Meters or 2650 cubic feet
100 Meters or 3530 cubic feet
150 Meters or 5300 cubic feet
200 Meters or 7060 cubic feet

Larger sizes also available



Built in standard size as listed above in single and double rectification units. Streamlined panel provides quick visibility of all gauges. Compact design—requires minimum of floor space.

INDEPENDENT ENGINEERING COMPANY, Inc.
CONSULTING · RESEARCH · DESIGNING
Manufacturers of
CYLINDERS AND GAS PRODUCING EQUIPMENT
ACETYLENE · OXYGEN · HYDROGEN · NITROGEN
O'FALLON, ILLINOIS

1500 tons to Carnegie-Illinois Steel Corp., Chicago, and 500 tons to Joseph T. Ryerson & Son Inc., Chicago; Ford, Bacon & Davis Inc., New York, engineers.

2200 tons, barrel house plant, Standard Oil Co. of Indiana, Whiting, Ind., to Carnegie-Illinois Steel Corp., Chicago.

410 tons, warehouse, William Wrigley Jr. Co., Chicago, to Joseph T. Ryerson & Son Inc., Chicago; Ragnar Benson Inc., Chicago, contractor.

400 tons, building, South Dakota Cement Co., Rapid City, S. Dak., to Carnegie-Illinois Steel Corp., Chicago; MacDonald Engineering Co., Chicago, engineers.

300 tons, addition, South Bend Tribune, South Bend, Ind., to Ceco Steel Products Corp., Cicero, Ill.

175 tons, Fall Creek protection work, including 9-span bridge, Indianapolis, to Bethlehem Steel Co., Bethlehem, Pa.; Smith & Johnson, Indianapolis, contractor.

130 tons, substructure, North State St. viaduct, Department of Public Works, Chicago, to Truscon Steel Co., Youngstown, O.; Thomas McQueen Co., Forrest Park, Ill., contractor.

REINFORCING BARS PENDING

400 tons, flood wall, Omaha, Nebr.; Parsons Construction Co., Omaha, low on general contract; bids to U. S. Engineer, Omaha, Feb. 26.

345 tons, state bridges and approach work in Woodbridge and Clark townships, Middlesex and Union counties, New Jersey; bids March 16.

300 tons, Claghorne public school, Philadelphia; Ralph S. Herzog, Philadelphia, low on general contract.

300 tons, addition to Port of Tacoma cold storage plant; bids in.

250 tons, commercial building, Tacoma, Wash., bids in.

125 tons, Municipal building, Evanston, Ill., for city; Peter Hamlin Construction Co. Inc., Chicago, contractor; bids Feb. 26.

120 tons, garage, Racquet Garage Corp., Philadelphia.

100 tons, grand stand, Community Club, Conshohocken, Pa.

100 tons, Oregon state overcrossing, Lane country; bids to Portland, Mar. 16.

Unstated, library building, Washington State College, Pullman, Oreg.; bids in.

PLATES . . .

PLATES PLACED

1900 tons, tanks, Southwest Oil & Refining Co., Corpus Christie, Tex., to Bethlehem Steel Co., Bethlehem, Pa.

335 tons, oil storage tank, Patterson Oil Terminals Inc., Paulsboro, N. J., to Chicago Bridge & Iron Works, Chicago.

150 tons, four tanks, Pennsylvania Power & Light Co., Allentown, Pa., to Lancaster Iron Works, Lancaster, Pa.

PIPE . . .

CAST IRON PIPE PLACED

440 tons, welded pipe, Texas Co., West Deptford, N. J., to Bethlehem Steel Co., Bethlehem, Pa.

STEEL PIPE PENDING

425 tons, steel water pipe of various dimensions, city of Philadelphia.

RAILS, CARS . . .

RAILROAD CARS PLACED

Atchison, Topeka & Santa Fe, 24 streamlined passenger coaches, to Pullman-Standard Car Mfg. Co., Chicago.

Norfolk & Western, 1000 seventy-ton hopper coal cars, to own shops at Roanoke, Va.

Union Pacific, 100 light-weight passenger cars, 50 going to the Budd Co., Philadelphia, and 50 to the Pullman-Standard Car Mfg. Co., Chicago.

CONSTRUCTION AND ENTERPRISE

CALIFORNIA

EMERYVILLE, CALIF.—Detroit Steel Products Co., 1310 63rd St., has awarded a $150,000 contract to Christensen & Lyons Co., 3454 Harlan St., Oakland, for erection of a plant addition.

SACRAMENTO, CALIF. — Newsom Kraft Corp., 85 Stanyan St., San Francisco, has awarded a $17 million contract to Merritt-Chapman & Scott Corp., 17 Battery Place, New York, for the design and construction of a pulp and paper mill on a 560-acre tract about 6 miles northwest of here.

SACRAMENTO, CALIF.—Kuster Laboratories Ltd., 571 Seventh St., San Francisco, plans to build a $100,000 plant.

SAN FRANCISCO—Joseph Wagner Mfg. Co. has been incorporated with 10,000 shares of no par value stock by Carl A. Mietz and associates to manufacture and distribute machinery, equipment, tools and appliances. Firm is represented by Mueller & Westover, Hearst Bldg.

STOCKTON, CALIF.—United Concrete Pipe Co., 419 Arrow Blvd., Los Angeles, will build a pipe factory here on a 58-acre site.

OHIO

ASHTABULA, O.—Electro Metallurgical Co. has begun work on a power plant and dust and fume control system here. Cost of the program, including equipment, will be about $9 million.

CLEVELAND—Elliott Electric Co., 2178 W. 25th St., has awarded a $150,000 contract to Dunbar Co., 8201 Cedar Ave., for repairs to a plant damaged by fire.

CLEVELAND—Aero Industries Inc., 1859 E. 63rd St., has been formed with a capital of $75,000 by William S. Jack and W. E. Tabb to manufacture hydraulic aircraft parts.

CLEVELAND—Sherwin-Williams Co. recently suffered fire damages estimated at $150,000 to its linseed oil mill at W. Third and Cuyahoga Ave.

COLUMBUS, O.—Pennsylvania Railroad, D. O. Sommerville, chief engineer, Pennsylvania Station, Pittsburgh, will build a $150,000 service building at 876 St. Clair Ave.

EUCLID, O.—Motch & Merryweather Machinery Co., Penton Bldg., Cleveland, has awarded a $250,000 contract to Bolton-Pratt Co., 1276 W. Third St., Cleveland, for construction of a plant at E. 222nd St. and Tungsten Ave.

EUCLID, O.—Fisher Body Co., General Motors Bldg., Detroit, has awarded a $500,000 contract to Brown Construction Co., 1900 Euclid Ave., Cleveland, for erection of a train shed addition to a plant recently purchased.

MAYFIELD HEIGHTS, O.—Diamond Alkali Co., Painesville, O., will build a $2,500,000 research and administration center on Mayfield Rd. Architects are Cutting & Ciresi, 4900 Euclid Ave., Cleveland.

PERRYSBURG, O.—Peters Stamping Co., George R. Roesch, vice president, plans to build a $100,000 building to house three presses.

TOLEDO, O.—Chesapeake & Ohio Railroad, L. T. Nickols, chief engineer, 823 E. Main St., Richmond, Va., has awarded a $1,500,000 contract to George A. Trombley & Sons, 4118 Stengl St., for construction of 17 tracks at Walbridge classification yard.

WARREN, O.—Wean Mfg. Co. has been formed by R. J. Wean Jr., 1235 Genesee Ave., with a capital of $200,000 to manufacture machinery.

PENNSYLVANIA

CLAYSVILLE, PA.—Manufacturers Light & Heat Co., Trust Bldg., Pittsburgh, plans to build an underground gas storage facility costing $500,000.

CORRY, PA.—Corry-Jamestown Mfg. Co. will build a $1 million manufacturing plant.

TITUSVILLE, PA.—Universal Cyclops Steel Corp. plans a $300,000 project including an annealing building, ingot storage facilities and rolling mills.

STEELTON, PA.—Harrisburg Gas Co., 14 S. Market St., Harrisburg, has awarded a $1,250,000 contract to United Engineers & Constructors, 1401 Arch St., Philadelphia, for the design and construction of a catalytic gas cracking plant addition, including a battery of furnaces to be built by Combustion Co., 2375 Dorr St., Toledo, O.

TENNESSEE

CHATTANOOGA, TENN.—East Tennessee Natural Gas Co., subsidiary of Tennessee Natural Gas Lines Inc., Nashville, will construct a natural gas pipeline from middle Tennessee to serve Chattanooga, Knoxville and intermediate cities. Estimated cost is $12 million.

JACKSON, TENN.—Ray-Vac Battery Co., 212 E. Washington St., Madison, Wis., has awarded a $180,000 contract to Hubert Owen Construction Co. for erection of a battery manufacturing plant.

TEXAS

ARLINGTON, TEX.—Sinclair Refining Co., 840 S. Lamar St., Dallas, has awarded a $2,730,000 contract to Pacific Pipeline & Engineers, for construction of a 182-mile oil products line between Arlington and Pauls Valley, Okla.

BAYTOWN, TEX.—General Tire & Rubber Co., 1708 E. Market St., Akron, will expand its synthetic rubber manufacturing plant here at a cost of $400,000.

BAYTOWN, TEX.—Humble Oil & Refining Co. plans a $19 million expansion program. Project includes a new pipe still.

BEAUMONT, TEX.—Sun Oil Co. plans a $300,000 laboratory here.

BEAUMONT, TEX.—International Derrick & Equipment Co. plans to spend $90,000 on additional plant expansion.

BEAUMONT, TEX.—Pure Oil Co. is reconstructing a portion of its Smiths Bluff refinery at a cost of $550,000.

BROWNSVILLE, TEX.—Rio Grande Valley Gas Co. will spend $115,000 on gas plant expansions and improvements.

DALLAS, TEX.—Daniel Radiator Mfg. Co., 1006 Caroline St., Houston, will build a $100,000 shop in the Trinity industrial area here.

HOUSTON, TEX.—Federal Steel Products Corp., 415 N. St. Charles St., plans to build a $100,000 plant.

HOUSTON, TEX.—E. I. du Pont de Nemours & Co., Wilmington, Del., has let a contract to Tellepson Construction Co., 3940 Clay Ave., for installing the mechanical and laboratory equipment in a gasoline testing laboratory building.

KILGORE, TEX.—Humble Oil & Refining Co. has awarded a $2 million contract to Fish Engineering Corp., M & M Bldg., Houston, for construction of a casinghead gasoline plant addition.

PORTLAND, TEX.—Louie Wohino, c/o Plymouth Oil Co., will build a $225,000 glass manufacturing plant.

UTAH

PROVO, UTAH—Geneva Steel Co. has awarded a $3 million contract to Walsh Construction Co., Davenport, Iowa, for construction of facilities for the production of hot-rolled coils.

SALT LAKE CITY, UTAH—Zion's Co-operative Mercantile Institution, 15 S. Main St., has awarded a $70,000 contract to Mark B. Garff & Co., 161 Hot Spring St., for construction of a power plant.

WASHINGTON

TACOMA, WASH.—Washington Steel Products Co., 1420 W. Galer St., Seattle, has awarded a $100,000 contract to Construction Engineers & Contractors Inc., 801 Port of Tacoma Rd., for construction of a fabricating plant.